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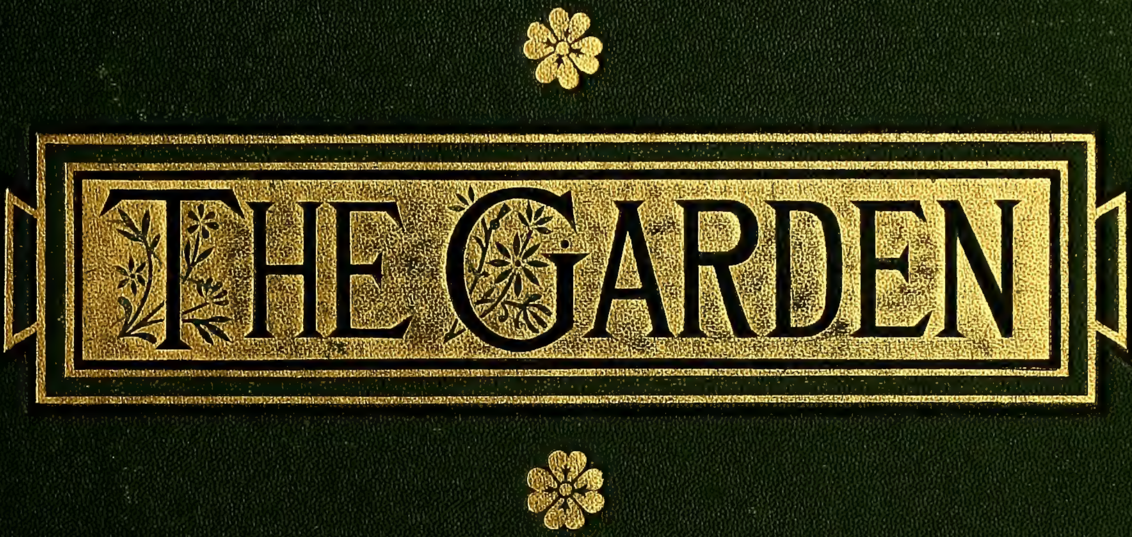

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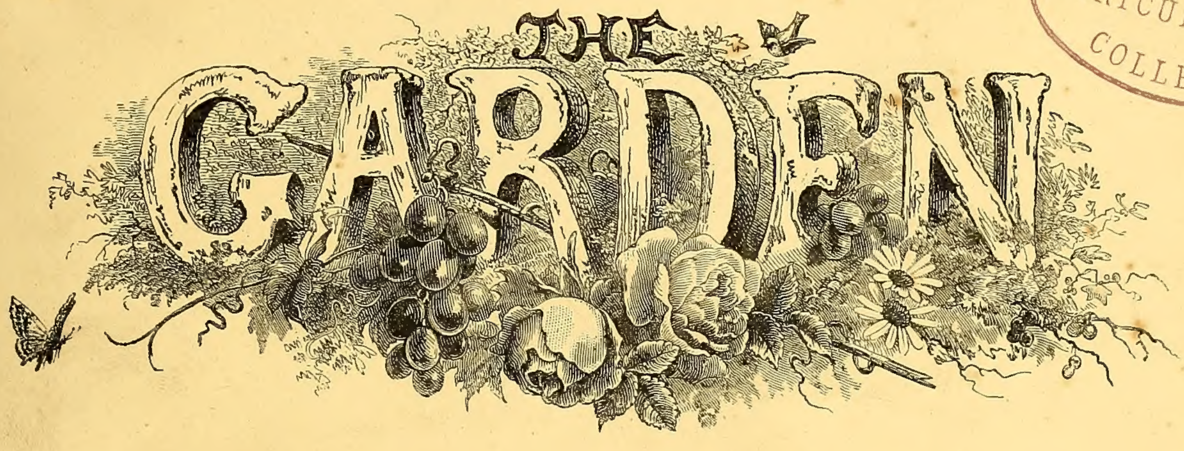

THE GARDEN

AN

ILLUSTRATED WEEKLY JOURNAL

OF

HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED BY

W. Robinson, F.L.S., Author of "Alpine Flowers," etc.

> "YOU SEE, SWEET MAID, WE MARRY
> A GENTLE SCION TO THE WILDEST STOCK;
> AND MAKE CONCEIVE A BARK OF BASER KIND
> BY BUD OF NOBLER RACE: THIS IS AN ART
> WHICH DOES MEND NATURE; CHANGE IT RATHER: BUT
> THE ART ITSELF IS NATURE."—Shakespeare.

VOL. XII.—CHRISTMAS, 1877.

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UPPLEMENT TO "THE GARDEN," DECEMBER 29, 1877.

TO

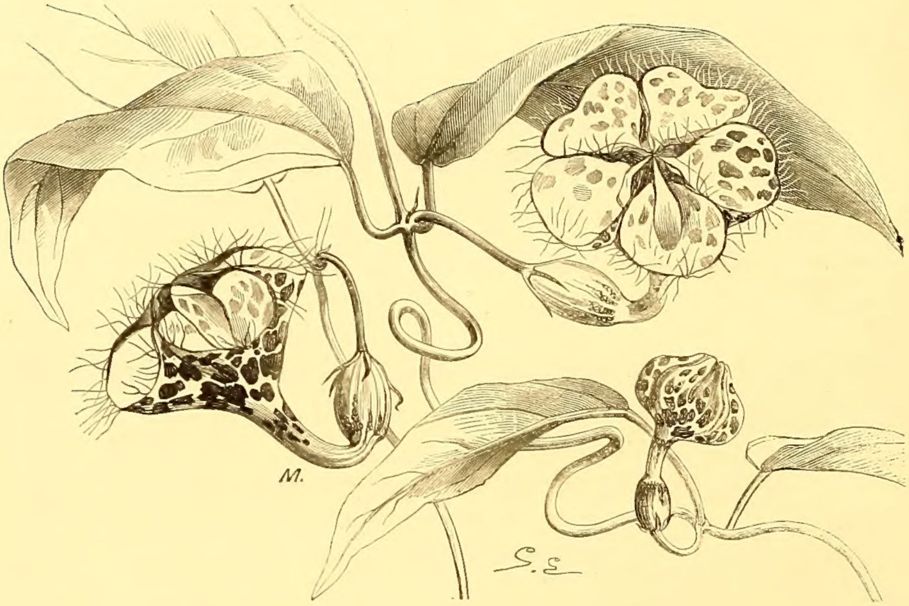
JAMES McNAB,

Curator of the Royal Botanic Gardens, Edinburgh,

THIS TWELFTH VOLUME OF "THE GARDEN" IS DEDICATED

IN RECOGNITION OF HIS LONG AND FRUITFUL SERVICES

TO HORTICULTURE.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JAMES McNAB.

JAMES McNAB, the present Curator of the Royal Botanic Gardens, Edinburgh, was born at Richmond, in Surrey, in April, 1810, and was taken to Scotland when five weeks old. For twelve consecutive years before 1834, he served as an apprentice, journeyman, and foreman in the Edinburgh Botanic Gardens with his late father. Besides the general routine of garden work, his early life was much devoted to the preparing of plans of gardens, greenhouses, heating apparatus by steam and hot-water, as well as to the drawing of many of the plants which flowered in the Edinburgh Gardens and Nurseries from the year 1829 and onwards. These were figured in the "Botanical Magazine," Sweet's "British Flower Garden," and other works. The year 1834 was spent in travelling in the United States and Canada, and the records of the more interesting plants obtained in this journey are to be found in a series of papers published in the "Edinburgh Philosophical Journal" for 1835, and in the earlier numbers of the "Transactions of the Edinburgh Botanical Society." In 1835 he was appointed Curator of the Caledonian Horticultural Society's Experimental Garden at Inverleith, where, besides the management of the garden, he had much practice in landscape gardening. This situation he held till 1849, when, on the death of his father in December, 1848, he was appointed Curator of the Royal Botanic Garden. At that time the garden contained only fourteen imperial acres. During 1859 two additional acres were added to its western side, and these were laid out and planted by Mr. McNAB. During 1864, by the annexation of the old experimental garden ground which belonged to the Crown, ten additional acres were added to the Botanic Garden, and re-arranged by the Curator for Conifers and other evergreen trees and shrubs. On the additional ground a rock garden was commenced in the autumn of 1860, in order to utilize the stones of the wall which originally separated the botanic from the experimental garden. This rock garden contains 5442 stone compartments or spaces for the cultivation of Alpine and dwarf herbaceous plants. To this rock garden additions have been made every year since its commencement. At first, all the plant compartments had more or less a northern exposure, but now many portions of the southern Grass slopes have been devoted to the culture of bulbous and other plants that require their roots to be thoroughly ripened for flowering, and the result has been in every way satisfactory. During the present year, twenty-six additional acres have been acquired by the City of Edinburgh, in order to be laid out as a general arboretum. This ground lies immediately to the west of the present garden, and is well adapted for arboretum purposes, being beautifully situated and commanding one of the finest views of Edinburgh from the north, besides affording great protection to the present garden. In addition to the extensive practise of gardening, Mr. McNAB has often been a contributor to horticultural literature, as his writings, not only in THE GARDEN, but also in the transactions of the Botanical Societies of Edinburgh and elsewhere, amply show. He did not, however, confine himself to strictly botanical and horticultural matters; on the contrary, his writings embrace numerous essays on Vegetable Climatology, landscape gardening, and arboriculture, all of which, if gathered together, would form many volumes. He is a corresponding member of several societies, both at home and abroad; also one of the original members of the Edinburgh Botanical Society, established February 8, 1836, to the transactions of which he has been a frequent contributor ever since their commencement.

Among the various features of the Edinburgh Botanic Garden which we owe to Mr. McNAB's skill is the Palm-house, which is most satisfactory from the point of view of design, and still more so from the admirable cultivation and arrangement shown in it by the Curator. If size only is not to guide our judgment, we must pronounce this the best-managed tropical house (both from the point of view of design, arrangement, and culture) of any in the botanic gardens of the United Kingdom.

Not less satisfactory are the collections of hardy herbaceous plants, Alpine flowers, shrubs, and trees in the garden. Mr. McNAB is among the faithful few who never deserted the beautiful hardy flora of our gardens for the famous red and yellow streaks that sometimes disfigure even our great botanic gardens. The Edinburgh Botanic Garden was always a garden, even during the most dismal period of the absence of variety in gardens. Therefore, when the tide began to turn back to pure gardening, Mr. McNAB found his reward in richly-stored collections of the finest hardy plants. His knowledge of these in such a national garden is most precious. It comprises the culture and habits of the plants, in addition to a mere acquaintance with their names and relationships. To enter, however, into the various departments of the garden which owe their riches in great part to long years of unwearied attention on the part of the Curator, is beyond the scope of the present note. It has been part of our plan to publish a portrait of a horticulturist who has done worthy work for our art with each volume. For this one we could think of none more worthy than JAMES McNAB. W. R.

THE GARDEN.

VOL. XII.

Pigmy Lilies.—It is not only the tall and stately Lilies which recent years have added to our gardens that give new and valuable materials to the flower gardener — the dwarf races are no less precious. We do not mean by this diminutive Lilies like L. tenuifolium, fine as these are, but the much dwarfer forms of Lilium Thunbergianum, particularly the variety aleutaceum. The remarkable value of these arises from the fact that the flowers are as large as the stoutest of the Orange Lilies, and the stems as dwarf as those of Cowslips. There are sheets of those now in Ware's nursery with large and glowing blossoms below the level of some of the dwarf Hairbells near. It is needless to add that these dwarf Lilies are very precious to all who wish to make artistic use of hardy flowers on the rock garden, or in borders or beds.

A Splendid Eschscholtzia.—From a gardening point of view' sometimes a new form may be a greater gain than many new species· A new variety of this old plant now in possession of Messrs. Carter, of Holborn, really deserves the above hackneyed epithet. The flowers, instead of being of the usual colour, are of a most brilliant orange-crimson outside, and deep orange within. The buds are particularly brilliant, but in all stages the colour is wonderfully showy and lustrous.

The Botanic Evening Fete.—This was very successful on Wednesday, and the gardens looked as beautiful as usual. The various garnishings for tables, &c., were graceful, though perhaps a little too much after one style, and that a painfully tedious one to carry out; we hope few will be led by these displays to worry themselves with elaborate compositions in floral decoration. The best of all are those which anybody can make in a few minutes with a handful of flowers or a few sprays. A list of prizes will be found in our outer sheet.

Roses on Their Own Roots.—The Rev. Canon Hole spoke as follows on this subject at a meeting of Rosarians which took place in St. James' Hall on Wednesday evening last:—The result of my experience is this, that the seedling Brier is the best stock for Roses, but I have a presentiment that ultimately the Rosarian will discard, not altogether but mainly, stocks of all kinds, and will grow Roses on their own roots.

Mountain Flowers in Armenia.—In the wild and cruel work now going on in Armenia, there is little time to think of botanical subjects; but we occasionally get from correspondents a reminder of the natural wealth of flowers of the land. A writer to the "Times," speaking of the Khargar Bazaar Range, says:—There was still snow remaining on the Herman Dooz. The parts where it had recently melted were covered with wild flowers of every hue and kind. A delicate Bluebell, such as I have never before seen, drooped gracefully at the very edge of the snow, while within a few yards a more homely-looking Bell and a delicately-tinted pink Anemone were to be seen. A large and very handsome Orchid, with Tulips of every colour, was found on the lower slopes of the mountain, and Sweet Brier, Mint, Thyme, Fennel, and wild Rhubarb were in great profusion.

Cherries from France.—Last week an immense quantity of fruit was brought into Newhaven harbour. In two days only no less than 190 tons of Cherries were unloaded at the wharf and despatched at once to London.

Spiræa Aruncus and its Forms.—Mr. Amos Perry calls our attention to the variability of this plant as regards stature, time and character of flowering. Some of the forms where the flowers are white and abundantly produced in beautiful plumes are so valuable that they ought to find a place in even the smallest collection of hardy plants. They are well fitted for planting in an isolated manner on the turf near beds of shrubs.

Orchis foliosa. — This lovely early summer-flowering plant, though perfectly hardy, is exceedingly useful in pots for greenhouse or conservatory decoration. In Mr. B. S. Williams's nursery at Holloway, plants of it are grown in 9-in. and 10-in. pots, and when bearing from twenty to thirty strong spikes of rosy-purple blossoms, as one now finds them, they are very effective, especially when associated with either cool Orchidaceous or conservatory decorative plants.

Strawberries.—These have been gathered about London for the past fortnight. They promise to be plentiful in this year of scarcity as regards hardy fruits generally. The following method of keeping Strawberries fresh is recommended in the "Bulletin de la Société Pratique d'Horticulture du Rhône." The fruit should be gathered early in the morning soon after the dew is off, spread out in shallow layers on screens, sieves, or the bottoms of wicker-work baskets, and lightly covered with Vine leaves. These receptacles are then placed on vessels of fresh water in a cool cellar. Thus treated, the most delicate and perishable kinds of Strawberries will remain fresh for a considerable length of time, even in the hottest weather.

The Potato Beetle Defeated.—Mr. E. S. Carman, writing to us from River Edge, Bergen, New Jersey, states that, as regards the Potato beetle, Paris green is so effectual a remedy, and so easily applied, that after one becomes used to it the beetle is no longer a source of dread. A paper has been printed by the Lords of the Council, Whitehall, with a coloured engraving of the beetle life-size and magnified twice. The paper in question is the memorandum of the Canadian Minister of Agriculture sent last November, which the Lords of the Council think it desirable to reprint and circulate, as intimation has been received from Ontario, Canada, that the country around that town is swarming with beetles. London papers contain alarming statements concerning this beetle—"leaders" appearing on it in all directions. Much of this might, we think, be spared till the enemy shows some sign of threatening us. The beetle is well figured in The Garden (see Vol. XI., p. 460).

Edraianthus dalmaticus.—This very beautiful Campanulaceous plant is now blooming freely in Mr. Ware's nursery at Tottenham. It seems robust enough to thrive in ordinary borders.

The Wigan Park Committee have received twenty-one designs for the laying out of the new park, the estimated cost ranging from £2200 to £18,000. Six have been selected for further consideration. —"Architect."

A Botanical Fete and Musical Promenade will be held in Messrs. E. G. Henderson & Sons' conservatory in the Pine-apple Nursery, Maida Vale, on Thursday evening, July 12, in aid of the Fund for the Enlargement and Improvement of St. Mark's Church, Hamilton Terrace, N.W. The conservatory will be illuminated with gas and coloured lights, and embellished with works of art contributed by various artists.

The Tuileries Garden.—The new Rue des Tuileries, cut through the late private garden of Napoleon III., in front of the charred ruins of the Palace, was opened for traffic on Friday week. The construction of this street—an immense convenience to the Paris population —was voted by a great majority of the Municipal Council in 1875, on the motion of M. Yves Guyot.

Scutellaria Mociniana.—This highly ornamental greenhouse plant, a coloured plate of which was given in The Garden (see p. 606, Vol. X.), is now finely in bloom at Kew, and for some time past small plants of it may have been seen in the Centre Avenue, Covent Garden. Considering its easy culture and attractive character when in bloom, it is however surprising that it is not grown for market more extensively than it is. Cuttings of the young wood taken off in the autumn, and inserted under a bell-glass, strike readily, and if grown on liberally in a warm pit close to the glass, early in the following summer they make dwarf handsome plants, which, when in flower, are unsurpassed as regards brilliancy of colour by any other plant at this season of the year.

Public Gardens in New England.—Boston's great scheme for the construction of an elaborate system of public gardens has been favourably reported upon by a majority of the Government Committee. The estimated cost of the proposed Charles River Embankment, the Back Bay Park, and the South Bay Park, is over £1,800,000. The committee urge that the work be begun at once, as land, labour, and materials are unusually cheap.

Practical Entomology.—A pamphlet has recently been printed and distributed amongst farmers and gardeners, accompanied by ruled sheets, and illustrated, for the purpose of recording monthly observations on certain selected insects, for the most part remarkable for the injury they cause to our common crops. This distribution is somewhat of an experiment, but similar observations taken by the Meteorological Society have not been without benefit, and we hope in this instance it will result in assisting to clear a somewhat vexed question, and help to relieve our agriculturists from one of the heaviest of their losses.

Strawberries in New York.—The "New York Times" of June 1 says:—"The quantities of Strawberries sold in the markets of this city yesterday were the largest ever known. Upwards of 750,000 quarts were shipped to the markets, and all were disposed of. Thirty thousand quarts came from Charleston, while the steamer from Norfolk brought the enormous quantity of 300,000 quarts; 75,000 quarts of this shipment came from one grower. He has upwards of 200 acres in Strawberries, and gives employment to 1000 pickers. The freight bill for yesterday's shipment was over 1000 dols., and the profit from the sale of the fruit will be about 5,000 dols. About 300,000 quarts came from Delaware and Maryland, and a large quantity from New Jersey, and some small shipments were made from points along the Hudson. The prices realised on the fruit were from 5 cents to 12 cents per quart."

Outbreak of the Potato Disease.—The Potato disease has broken out in this locality to a serious extent, the first affected being the American varieties. The following are notes made after inspecting some cottage gardens this morning:—American Early Rose—spots in leaves noticed first week in June, haulm now nearly destroyed, one-fourth of tubers effected, and very small. American Natives—leaves slightly spotted, a few of the tubers effected. Rector of Woodstock—leaves slightly spotted, no disease in tubers. Improved Ashleaved Kidney—leaves much spotted, tubers affected. Snowflake —leaves spotted, no disease in tubers. Early Red Emperor and Rector of Woodstock on same plot of ground, in rows parallel with these, but not at all affected. Bresee's Peerless—leaves spotted. Perkins' Pink Eye, Lapstone, Wilmott's Black, and Flounders grown in some garden, but not all affected.—Andrew Donaldson, *Stoodleigh Court, Tiverton.*

Figs Trained and Untrained.—Some are of opinion that Figs on open walls are more satisfactory left to grow wild than trained. The reason for this is obvious; the training was not suited to the requirements of the subject dealt with. I have myself seen fruit in abundance in exceptionally fine seasons on trees uninterfered with, but the crop was certainly not so regular, fine, or satisfactory as that on trees which were systematically trained so that the maximum of heat and light might reach the useful bearing wood, and the strength of the tree be directed towards its production, instead of being wasted on useless watery growth. My own impression is that no fruit tree better repays a little extra attention than the Fig.—James Groom, *Henham.*

Covering Early Vinery Borders.—Neither Mr. Baines nor myself are, I trust, actuated by the motives to which he alludes in this discussion, viz., a determination to carry the argument rightly or wrongly. I submit that I have fully stated my side of the question, and in the plainest English, to put it as shortly and concisely as possible, it is simply this, the root temperature necessary for the successful culture of the Vine cannot be sustained by the aid of non-conducting materials alone, where the roots are all outside, and where forcing is carried on throughout the winter and spring. This is the question involved and the point which Mr. Baines has hitherto evaded. I have never known good crops of early Grapes to be produced under such circumstances with any constancy or regularity—I might say, never—and Mr. Baines himself is not able to produce any such instance, for the case which he cites, near London, in which half the roots are inside, and in which there does not appear to have been any particular object in applying the non-conducting materials, cannot reasonably be offered as evidence in support of his case; and besides Mr. Baines keeps the whereabouts, &c., of the experiment a secret, while he does not hesitate to call it evidence sufficient to satisfy any unprejudiced person, and accuses me of not furnishing evidence on my side, whereas I have given him evidence of the most decided kind, the truth of which he may prove to his own satisfaction if he will try and a thermometer inserted in an outside early Vine border protected in the way he recommends will indicate a state of things wholly unnatural and most certainly injurious to Vines. This is the aspect which the question assumes in the mind of anyone who realises the force, as I said at the outset, of Mr. Baines' remarks at page 312. As I am not very anxious to have the last word, I here leave the subject.—J. Simpson.

The Fruit Crop in Ireland.—From what has come under our own observation and been gathered from other sources, we ("Farmers' Gazette") cannot help coming to the conclusion that the wail as regards the year's fruit crop need not be quite so despairing as we have heard it; on the contrary, we anticipate that when the wind-up of the season comes, the prophets of evil, who prematurely announced the "total wreck" of the crop, and that we would have "no fruit" this year, will have no great reason to be proud of their vaticinations. It is true that, with the exception of bush fruits, as Gooseberries, Raspberries, and Currants, and also Strawberries, all of which are up to and perhaps over the average, the crop of other out-door fruits will be considerably under it. But neither the Peach crop nor the Pear crop, the Apple, or the Apricot will be, as we were told they would be, blank. It is at all times rash to draw conclusions from particular instances. Situation, soil, shelter, habit of the tree, and other circumstances, modify greatly the results of the season as regards fruit. For instance, we have remarked that the early blooming Pears, as the Jargonelle, pulled through this year rather safely, and are carrying fair crops; so also have Pears on south walls, while later-flowering kinds are nowhere as regards a crop. Peaches will carry a crop quite heavy enough for the trees to ripen, taking into account how the foliage has suffered this year. Plums will, we apprehend, have the worst account to give of any, Pears coming next. Apples will by no means be so scarce as we were led to expect. Of some kinds and in some places the crop is even a heavy one. When we take in account that in ordinary Pears fruit thinning is not practised to one-half the extent it ought to be, we may expect that size and quality will, too, this year go far to make up for quantity.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

THE thirty-fourth Anniversary Festival of this Institution was held on Wednesday evening last at the "Albion," Aldersgate Street, under the presidency of Sir Trevor Lawrence, Bart., M.P., and there were also present among others Mr. W. E. Brymer, M.P., Serjeant Cox, Lord Alfred Churchill, Major Sandys, Messrs. G. F. Wilson, A. Philbrick, J. S. Bockett, Robert Wrench, H. J. Veitch, Edward J. Beale, George Deal, John Lee, Charles Lee, John Fraser, and B. S. Williams.

The Chairman, after the usual loyal toasts had been given, proposed the toast of the evening—"The Gardeners' Royal Benevolent Institution, long may it prosper." He said that when four months ago it was proposed to him that he should have the honour of taking the chair at the thirty-fourth Anniversary Festival, he confessed that it was not without very serious misgivings that he consented to do so. He had a sense of considerable fear that owing to the inefficient way he should lay before the company the claims of the Institution, that, owing to his insufficient force in urging its great and just claims—the Institution might in some shape or other suffer. However, they all knew that there was some excuse made for people if they had their hearts in the right place; and he thought he might safely say that his was so as far as the Institution for which he was pleading was concerned. His early recollections were associated with gardening; and he did not think that, from the time that he was able to "toddle" about the room, that he had been long absent from the associations of gardeners and gardening; it would therefore be strange if the man did not grow up as the child was trained. He might say that in his great love for gardening, and for all who belonged to it, he yielded to no one. In his opinion gardening and gardeners had almost as great a claim upon the public as upon those who were especially devoted to the pursuit. He did not believe that there existed in this country even one man or one woman who had not been much influenced and attracted and delighted by the produce of the garden. The real truth of the matter, so far as this country was concerned, was that England was a country of gardens. Recently he had been talking to Mr. Walters, M.P., of the "Times," and that gentleman said that it was almost impossible to describe the delight with which he came, after a long journey amid the endless plains in America, to the beautiful hills and cultivated country of Warwickshire. And there was a somewhat similar to feeling that with travellers when they came back from northern parts of France and passed through Kent, for it was impossible for them to draw comparisons not altogether favourable to the country they had left. He wished to urge that there was no purer, simpler, and healthier taste than the taste and delight which were experienced in gardening. One of the great features of this country were its gardens. He need not ask them to go far to prove how true that was, for those who lived a great deal of their time in London had only to walk into one of the parks of this great Metropolis to see what strides had been made in gardening, so far as certain parts of the Metropolis was concerned. He did not believe that more beautiful gardens of their sort existed than those which the nation had been wise enough to give them in Hyde Park, in Battersea Park, and other parks. Anyone who compared the condition of those parks now with what they were ten years ago, must see that we have among us a great love of flowers, and that leads us to think of those who tended them and to whose skill and care we were indebted. Many of the gardens on the Continent were under the care of English and Scotch gardeners; and we believe that it was a fact that no nation had so successfully devoted itself to the beautiful productions of Nature—the flowers, fruits, vegetables, and trees—as the English, the Scotch, and the Irish. It was very common in this country to hear complaints about the climate—and he was not going to deny that there were certain features about this climate which were not altogether what we should like them to be—but he had had a good deal of experience about climates, and he was certain that if they took the climates of the countries around they would not find a climate nearly as good as that of England. They might pick two or three months in one country, and two or three in another, and out of such a combination they might make a better twelve months than they could get here, but on the whole he preferred the English twelve months. Whilst the gardeners complained that every now and then nature placed great obstacles in their way, it was all the more creditable that their skill was able to triumph over those obstacles. He need hardly remind them that the surface of this country was covered, in a great measure, with plants, fruits, and flowers, which were not strictly indigenous to the soil. They were exotic, and it was only by the care and the great skill of our gardeners that they had been naturalised in this country, by which means they had been adapted to the new conditions under which they had to live. Further than that, as exhibiting the great skill shown by gardeners in this country, he referred to the beautiful hybrids which were continually being raised. When they came to consider what it was which made a successful gardener, he thought that they would allow that he must possess very considerable natural powers, that he must have used those powers of observation to advantage, that he must have been both careful and industrious, and that he must have employed the early years of his life to the best advantage, and the outcome of such use of his powers was the grand results produced by such persons as those on whose behalf he ventured to ask for support. From a statement which he had had placed in his hands, it appeared that the Gardeners' Royal Benevolent Institution had now been established for a considerable number of years, since 1838, and during that time it had assisted 242 persons—242 gardeners or their wives—at the cost of £21,700. It had now upon its funds 72 pensioners, and with regard to these he would ask them to look at the list, because it afforded a great deal of satisfaction to notice what a healthy man the gardener was, and that he attained to an advanced age, some of them having reached to ninety, and ninety-one. £16 per annum was allowed by the Charity to a male, and £12 per annum to a female pensioner; the amount of the funded property of the Institution was £11,000, invested in Three per Cent. Consols, and he had ventured to suggest to the secretary that the money might be so invested as to produce a larger amount, but the reply was that the Act under which the Charity was registered would not allow it to be done. The income of the Charity was mainly depending upon the donations received at the annual dinner, the annual subscriptions, the money received from advertisements, and the dividend on stock, but the first—the donations received at the annual dinner—was the most important. He therefore asked them to drink the toast with all gratitude to those persons with whom they had been connected, perhaps for many years, and to whom they owed many of their purest and most satisfactory pleasures. While asking them to drink the toast with all enthusiasm, he asked them to support it with the best and most kindly intentions.

Mr. Robert Wrench (the treasurer) responded to the toast. He was glad to see Lord Alfred Churchill present; it was an example which it was to be hoped would be followed. There were many gardeners, but they would like to see their employers there. They hoped to have the Prince of Wales to take the chair some day, and when that happy occasion arrived, they might depend upon it it would result beneficially for the Charity.

Mr. Philbrick, Q.C., proposed the health of the Chairman, and referred to his great love of flowers.

The Chairman expressed his desire and willingness at any time and on all occasions to assist both the Institution and those who were engaged in gardening. He expressed his thanks on behalf of the company to those nurserymen who had contributed to the evening's entertainment by the trouble they had gone to in providing beautiful decorations of fruit and flowers and plants.

Serjeant Cox, in proposing "The Horticultural and Botanical Societies of London," said that the toast could not be omitted, for they were honoured by the presence of a vice-president of one of those societies. Those two great societies centred in themselves in this country the science of horticulture, and they showed the importance of bringing together the horticultural knowledge of the country. It was only by so doing that it could have made the progress which it had done of late years. They must all regret that one of those societies was now under a cloud, but he trusted that it would be merely temporary, and that when the cloud had passed away, the society would have before it a long life, and would be able to render even greater services to horticulture than it had done. He could not say much of the Royal Horticultural Society, because they could not conceal from themselves that its object was rather to induce a love of flowers than to give a knowledge of horticulture. Nevertheless, the Society performed a very important work by keeping before the public by its gardens the fact that horticulture was a science. But what would those societies be but for the work of the gardeners on whose behalf they were assembled on that occasion? They could do little but for those men whose power, mind, and muscle were devoted to performing the work of those societies. What would they do without the services of such men as Mr. Alfred Shuttleworth and Mr. Dominy? Those were the working men—whose hands and heads were doing the work that was centred in the proceedings of the societies to which he was referring. Therefore it was most proper when success to those societies was being proposed that they should recognise the claims of the persons whom they were assembled that evening to support. Those persons were entitled to every assistance and support when illness overtook them or when old age came upon them.

Lord Alfred Churchill, in responding, said that he was glad to say that the Society which had been referred to as passing through some difficulty was now showing signs of improvement in its financial position, and it was now also endeavouring to encourage scientific horticulture. For that purpose the Society had determined to recommence the publication of a journal in which would be published correspondence from scientific societies on the Continent and the results of scientific meetings of the Society. It was also intended to resume the provincial shows, and in the following year to establish a great national show similar to one which took place in 1866. He rendered them his cordial thanks for the support which they had given those societies on all occasions.

After the health of the Secretary had been proposed and responded to, the "Patrons and Lovers of Gardening" was next proposed by the Chairman, and Mr. Philbrick, Q.C., responding, said that to those who lived within the limits of London, it was a great privilege to be able to pursue their favourite amusement and their favourite relaxation, despite the difficulties which the surrounding atmosphere and circumstances entailed upon them. They had to rely upon the constant care, vigilance, and attention of their gardeners; and a more faithful, honest, and respectable body of men than the gardeners of the United Kingdom he thought could not be found. Reference had been made to the ennobling effect which the pursuit of horticulture had upon persons, and he quite agreed with that. Their efforts were now directed by the continual struggle to bring back the primeval paradise, and they got the nearest to it when their gardens were the best. Therefore, the most ancient of all arts, the best of all pursuits, the most ennobling, and of all occupations that which most tended to refine and to give the greatest enjoyment was—gardening!

THE CULTIVATION OF MEDICINAL PLANTS AT BANBURY.

The principal grower of medicinal plants in the neighbourhood of Banbury is Mr. Usher, of Bodicote, a small village about two miles from the town. At present he has about sixty-five acres under cultivation, twenty of which are devoted to Rhubarb, forty to Henbane, and four or five only to the White Poppy. He has also lately commenced the cultivation of Rosa gallica, L., on a small scale. On a recent visit to Banbury much interesting information was kindly given me by Mr. Usher, and as it was the result of observations which had been made by that gentleman during the course of many years, it seems very desirable that it should be placed upon record.

Rhubarb.

The history of the cultivation of this plant in this district has been briefly sketched by Hanbury in "Pharmacographia." In that work he attributes the plant cultivated at Banbury to Rheum Rhaponticum, L. It, however, more closely resembles R. undulatum, L., differing chiefly from the description of that plant, as given by Meisner, in the upper leaves being distinctly stalked. From R. Rhaponticum it differs in all the leaves being longer than broad and minutely ciliate at the margins, and in the petiole being distinctly channelled on its upper surface above the middle, although it becomes flat near the base. The leaves have a few large somewhat triangular teeth near the point and the petioles and stem are slightly furrowed, and the ochreæ do not appear to be deciduous as in R. undulatum. It would thus appear to be a hybrid between the two, if indeed the two species be really distinct. When in blossom the panicle is at first decidedly spreading, so much so as to present an appearance totally different to that which it offers at a later stage, when its branches become quite erect. Indeed, had I not found the two stages proceeding from the same root, I could hardly have believed that there were not two species growing in the same field. On closer inspection, however, the characters presented by the leaves and leaf-stalks convinced me that only one species was under cultivation. The soil on which the plant is chiefly cultivated is a rich red friable loam, which appears to suit it well, although in some spots where the soil is damp the root decays and the plants gradually disappear. Mr. Usher's experience with regard to this plant is as follows:—Up to three or four years of age the plants flower rather freely, but after that time they rarely produce inflorescence. Singularly enough, for many years past no fruit has been ripened, the little that is formed falling off soon after "setting," so that it would seem as if the plant had already acquired a tendency to become a root-producing rather than a fruit-yielding form.

The Rhubarb plant does not appear to be much attacked by insects or by fungi. After about eight or nine years the soil becomes exhausted, and a rotation of crops becomes necessary. The exhaustion of the soil is, however, in some degree counterbalanced by the matter returned to it by the leaves, which are allowed to decay on the ground, and even those which are taken up with the root are afterwards returned in the form of manure. The young plants are not obtained from seed, but are always propagated from the lateral shoots of plants about four years old, at which period the shoots are more vigorous and produce finer plants than if obtained from older ones. The petioles are never gathered for food, because it has been found that so doing injures the size and quality of the root. The young plants are set at distances of 3 ft. apart, and the root is not fit for collecting until the plants are about four years old. From that period up to nine or ten years of age the root improves in size and quality. Plants of different ages are of course cultivated in different fields so as to secure a succession of harvests each year. Plants of about four years old yield from 1½ to 2 tons of dried root per acre, but ten-year-old plants will yield about 5 tons per acre. The drying is by no means an easy task. The roots are dug up in hot weather, at any time between July and October, and for the first fortnight are exposed to a current of air on wicker baskets in a covered shed. They are then removed to the drying-room, where they are dried gradually but thoroughly for about six weeks, by means of a current of heated air. This part of the process requires great care, lest their outer portion should be dried too rapidly, while the interior is still moist. The large central portion, or tap root, furnishes the pieces known in trade as "fine large flats" and "fine large rounds." The "small rounds" and the cuttings commonly known as English "stick" Rhubarb are obtained from the side branches of the root. Some of the flat pieces, except for their shrunken exterior, are not unlike the East India Rhubarb of commerce, and being more thoroughly dried right through and harder in the centre seem to meet with a greater demand than the rounds. The raspings obtained in trimming the pieces are ground into powder. The average yield of the dried root every year is from 8 to 10 tons.

Of the Rheum officinale, Mr. Usher has now under cultivation in his garden about forty large plants between two and three years old, as well as about 200 seedlings. These plants are truly magnificent, each plant occupying a space from 8 to 12 ft. square, and standing 4 or 5 ft. high. Some of the leaves are nearly 3 ft. broad, and longer than they are broad. It is just suitable as an ornamental plant for lawns, where it would have plenty of room to grow; indeed it is already used in this way in some of the public gardens in Paris. The root of only one plant has as yet been dried, and was obtained from a plant barely two years old. A piece of this root has been presented to the museum of the Pharmaceutical Society, the remainder having been almost all sent to the Philadelphia Exhibition, where it obtained a medal, and was purchased. In colour, the dried root is paler, although the veins are darker, than in the East Indian Rhubarb. Mr. Usher informs me that it nevertheless yields a bright yellow powder. The external markings do not exactly correspond with those of the East Indian Rhubarb, the peculiar reticulated appearance characteristic of that sort not being visible on the two pieces that I have seen. This may, however, be due to the age of the root, which was less than two years old. It yet remains to be seen whether the root differs when older, or whether some portions present a different aspect to others. These points I hope to have an opportunity of investigating a little later on, when Mr. Usher will dig up some larger roots. Towards the close of the year he will probably have sufficient of the dried root of this species to be available for therapeutic purposes, and it will then only remain to ascertain whether its purgative properties are equal to those of the foreign Rhubarb, which after all will be the test of its acceptance with the medical profession. A chemist at Banbury has prepared some simple tincture from the trimmings of the root, in the proportion of two ounces to the pint of proof spirit, and has found it an effectual purgative in ounce doses.

Henbane.

Doubtless many of the readers of this Journal have often wondered at the high price of biennial Henbane. The information which Mr. Usher has kindly furnished will probably throw considerable light upon this point. The biennial plant is the only one cultivated at Banbury, it being found that the presence of the annual plant tends to deteriorate the biennial variety. With regard to the difference between the two plants, Hanbury says there is scarcely any distinctive character, except that the one is annual and the other perennial. There is, however, something very distinctive in habit. The biennial plant grows to the height of 2 or 3 ft., and is abundantly branched, and the stem is often nearly an inch thick at the base. At a distance, a field of biennial Henbane looks like a field full of Thistles, so much so, that Mr. Usher has occasionally heard the remark from farmers passing by. "That is bad farming, look at those Thistles." This curious appearance is owing to the leaves being deeply cut, in fact almost pinnatifid. The chief difference in the leaves of the two varieties is, that in the biennial plant the leaves are about twice as long as in the annual one, and deeply cut, and the terminal lobe of the leaf is long and rather narrow. The leaves of the upper branches, however, resemble when young those of the annual variety, being shorter and having the top of the leaf much broader, and more triangular, not lanceolate as in the stem leaves. The seed of the biennial plant is sown in May or June, and either appears in a few days or not for several years. Mr. Usher informed me that in one field sown with Henbane none of the seed came up, and the field was again sown with other crops, and it was not until nine years afterwards, during which period the field had been several times ploughed, that it yielded a good crop of Henbane, quite unexpectedly, and without any more Henbane seed having been sown. This uncertainty seems to depend upon the weather being dry soon after the seed is sown. If the weather be damp immediately after sowing the seed, it usually comes up at once.

The cultivation of the plant is beset with difficulties. In the first place, it grows very slowly when young, and is soon hidden by weeds of more luxuriant growth, so that it has been found necessary to mix some rapidly growing plant, such as Mustard, with it in order to indicate where it is sown. It also requires shelter when young. This difficulty Mr. Usher has obviated by sowing it in rows between Beans, so that it may be protected in its early stage. As soon as the young leaves are fully formed the Turnip fly attacks them; when the autumn leaves of the first year have decayed, a white slug eats away the central bud; and if it still manage to live, a wireworm attacks the root during the winter. It will be easily understood, therefore, why the fields of Henbane often present very large bare patches, and why the price of the drug is so high. The plants are collected for drying about the third week in June. The upper leaves are deprived of the midrib, and these as well as the flowering tops are dried, and form the best biennial Henbane of commerce. The lower leaves and stems are used for preparing extract, for which purpose they are crushed under an edge runner, and the juice squeezed out by hydraulic pressure, and then evaporated down to a proper consistence. It is obvious that an extract prepared in this way on the spot by the grower is likely to be better than when prepared from the herb sent to a distance by rail, for these plants become heated in twenty-four hours when packed closely. The leaves and flowering tops are dried in malt-kilns, of which seven are in use at once. The leaves are spread thinly at first and are turned over about three times a day, and as they become somewhat dry are collected closer together into rows or heaps on the kiln floor. As one lot becomes partially dried it is removed to another kiln until quite dry, which usually happens in about three days, and a fresh lot takes its place. There are one or two points with regard to the flower which are rather interesting. The flowers are proterogynous, the stigma becoming mature and viscid before the anthers open, and the stigma and nearly half the style are protruded beyond the unopened flower-bud. The corolla is more deeply divided in its lower half than elsewhere, and the stamens and pistil are depressed towards this portion, so that insects visiting the flower for nectar must pitch upon the stamens and receive the pollen upon their legs or abdomens, and must thus almost of necessity convey it to the protruded stigma of the unopened flower. When the corolla is fully grown it exceeds the stigma, so that the style does not appear to grow in proportion to the corolla. The anthers are furnished with a curious connective of a narrowly triangular form into which the filament tapers. As soon as the anther bursts it becomes bent backwards away from the stigma and towards the ovary, as if to prevent the pollen from falling on the stigma of the same flower. Mr. Usher informs me that the annual variety does not possess a long protruded style, but as he had no plants growing, I was unable to verify this observation. It would be interesting to ascertain if the Henbane be dimorphic, and if the annual plant be the second form. Another interesting point of inquiry is whether the plant possesses the power of digesting the multitude of minute insects which late in the season are caught by the clammy glandular hairs. The frequent occurrence of Henbane on manure heaps or places in which insects are abundant seems almost to point to such a property.

White Poppy.

The culture of this plant is attended with so much trouble and expense that it scarcely repays the labour expended on it. The seed has to be selected very carefully, for singularly enough the Poppy shows a constant tendency to "sport," and if left to itself, the flowers of the White Poppy become coloured in a few generations; the size of the capsule decreases, and the colour of the seeds and of the flowers becomes darker in proportion, until at length the flowers become purplish-black, and the seeds quite black. Mr. Usher accounts for this fact by supposing that insects carry the pollen from the wild Red Poppy (Papaver Rhæas) to the white one. In order to get large capsules, only the very whitest seeds are retained and sown. Those Poppies which have dark flowers, he states, produce darker coloured somewhat oblong capsules. The German Poppy seed produces a large capsule much flattened at the top and bottom, and with the carpels strongly convex and prominent so as to have much the appearance of a peeled Orange, or of the capsule of Papaver hybridum, L. This variety is not, however, readily accepted in commerce. The seeds of the White Poppy are sown in rows about 20 in. apart. When young the plants require constant weeding. The capsule, when the flower has fallen, is about the size of a Walnut, and is stated by Mr. Usher to grow to the size of an Orange in the short space of ten days, although it takes nearly five weeks to ripen. Each plant bears about two or three capsules. The harvest is collected during the last week in August or the first in September. A waggon-load of the capsules is placed on the floor of each of the kilns and forms a layer about a yard deep, the whole of which becomes dry in about twelve hours, and is then ready for sale.—"Pharmaceutical Journal."

CLIANTHUS PUNICEUS AT EDINBURGH.

At Almora, near Edinburgh, the residence of Mr. Guthrie, this favourite old greenhouse plant has been for some weeks beautifully in bloom. It was planted six years ago in the ordinary soil (a strong loam) in front of the mansion, which faces south-west. It covers 15 ft. by 6 ft. of the wall, and is still one mass of bloom from the ground to the top. It would have occupied double the space, but it is properly kept within certain limits, so as not to interfere with important architectural lines on the building. On the front of the house, which is panelled, grow other plants besides the Clianthus—such as Escallonia macrantha (a fine wall shrub, both as regards foliage and bloom), Forsythia viridissima, Ceanothus rigidus, Gloire de Dijon Rose, various creepers, and a Black Hamburgh Vine, all sufficiently luxuriant to show that their wants are specially studied. The two last, indeed, are in much better condition than that in which they are usually met, and are only surpassed by a Maréchal Niel Rose and a Black Hamburgh Vine a short distance from here, on the house of the Rev. D. K. Guthrie. This Rose is furnished with 100 expanded blooms, each of which is sufficiently good for an exhibition stand, and the Vine is now in flower. The situation is high and exposed, and success in this case is only the result of constant care and attention. I may add that indoors, where plant cultivation is successfully carried on, I noticed growing on each side of the inner door of the entrance hall a Kangaroo Vine (Cissus antarctica), forming an unbroken arch from floor to ceiling, and in point of luxuriance quite equal to Vines growing outside. A. McLeod.

14, Royal Exchange, Edinburgh.

A RARE INSTANCE OF CONING AND SUBSEQUENT DEATH.

In March 1876 I sent to the Royal Horticultural Society in London two coned sprigs of Picea religiosa, the sacred Fir of Mexico, grown at Penrose. Mr. A. Murray, then secretary of the Arboricultural Committee of that Society, believed it to be the first recorded instance of the fructification of this graceful and delicate Conifer in England, a fact which may be worthy of record. I have only two specimens of this Picea; one is a seedling raised here from a cone which was brought me from Mexico, planted out in 1859, and now about 20 ft. high; the other, which produced these cones, was bought by my father in 1847, and transplanted by me in 1857 into a sheltered spot in the rich soil of an ancient rookery; here it died back after removal, was cut down to a promising shoot, survived the severe winter of 1860-61, lost its head again in a gale in 1867, was pruned again, and though not, as might be expected after such treatment, a very shapely tree, was fairly vigorous, about 25 ft. high, and 2 ft. 10 in. in girth at 30 in. from the ground. In the autumn of 1875, I observed more than 100 cones had formed upon it; in December, I picked a few, which then had the purple tint of those of P. Webbiana, but somewhat smaller. The finest cones, when I gathered the remainder in March, were 4⅓ in. long. Loudon represents them as only 1½ in. in Mexico: but I have observed a similar increase in the size of cones under favourable treatment of the parent tree in England, in the case of other varieties. The specimen cones were deposited in the Museum of the Royal Botanic Gardens at Kew, and the remainder were carefully sown, some here, some at Mr. Nichol's nursery, Redruth; but no seedlings were produced at either place, the climate of Cornwall being probably not dry enough to mature the seeds. I have now the mortification of reporting that the effort has destroyed the parent. The tree is quite dead. J. J. Rogers.

Penrose, near Helston.

The Edinburgh Arboretum.—Twenty-seven acres of ground have been added to the Botanic Garden, which now embraces 54 acres. The first steps for the addition were taken by Prof. Balfour three years ago, with the object of having room for the cultivation of trees suited to the climate of Scotland, and to prevent devoting the ground for building purposes, which would not only have spoiled the amenity of the gardens, but would have been productive of much injury to the plants by the smoke which would have been carried over the gardens by the west winds. Mr. Alexander Beattie was the first with whom he (Prof. Balfour) communicated on the subject, and through him he was enabled to bring the matter under the notice of the Secretary of the Treasury. The First Commissioner of Works, Lord Henry Lennox, approved of his proposal, in which also he was supported by others. His next step was to go to London, and personally bring the matter under the notice of the Treasury. Having laid the case fully before Mr. Smith, shown him the plans of the ground, and urged the importance of making such an addition to the Royal Gardens, he pointed out to him that the Chief Commissioner of Works had seen the ground and considered that it would be a most important and valuable acquisition. Mr. Smith stated that if it were proved to him that the town of Edinburgh would take an interest in the Arboretum by contributing to the acquisition of the ground and handing it over to Government, the Arboretum would be put under regulations similar to those of the London parks, and would be supported in all time coming by an annual grant from Government. On returning to Edinburgh he waited on the Lord Provost, who entered enthusiastically into the plans, and said he would do all he could to further the scheme. Many difficulties presented themselves, but by his energy and tact he overcame them all, and to his lordship the city of Edinburgh was indebted for this important addition to its gardens. The Government was pledged to enclose the grounds and complete the arrangements in two years, and he therefore hoped that immediate steps would be taken to fence the grounds and begin the building of the lodges at the different entrances.

Summer Transplanting.—With care many trees and shrubs may be moved successfully during summer. These consist of Hollies Rhododendrons, Azaleas, Aucubas, Laurustinus, Common and Portugal Laurels, Box, and, indeed, most evergreen subjects, except the Pine tribe, which it is better to leave until autumn or spring. The same advice applies to deciduous subjects, though they are sometimes moved in full leaf. The young growth of summer-transplanted evergreens is almost certain to suffer, but that is not of much importance, and is soon made up again. In summer of course the plants must be lifted with good balls and plenty of roots, and be well and frequently watered and mulched. In looking over some Yews and other trees, a number of which were planted early in March, and the rest in May and up till the end of that month, I find that the earliest-moved trees have suffered worst, the persistent east winds of March and April having scourged them severely, while the later-moved ones—all of them begun to grow at the time—look well. Laburnums from 8 ft. to 9 ft. high were just coming into leaf when lifted, and they are now in flower and growing away famously. They were taken from a thicket of self-sown seedlings, and consequently had no soil whatever to their roots. A quantity of named Rhododendrons, hybrids which were planted some years ago in somewhat heavy loam of an irony character, were found to have rooted in it freely and made good growth, though they were originally transferred direct from the Surrey peat. There is no difficulty in getting all the hardy Rhododendrons to grow and flower freely in good loam that is free from lime. I am acquainted with one large plant, or rather three plants in one—all having been planted together—that are just about 100 paces round, and they are growing in loam; but of course the fallen leaves have been allowed to accumulate on the ground under the branches for years, and no doubt they constitute part of the rooting medium and keep the roots healthy and enriched. In all shrubbery and Rhododendron borders the fallen leaves should be allowed to lie and decay—they are as good a top-dressing as can be provided. Newly-planted shrubs of all kinds should of course be mulched.—Chef.

Early Peas.—I have always until this year gathered my first Peas (outside from seeds sown early in November) from the 28th of May till the 6th of June, but this season the look of my November sowings in January was anything but satisfactory. I therefore sowed 4 doz. boxes of Little Gem in the Cherry-house, which was unheated, and grew them close to the glass. When coming into bloom I top-dressed them with rotten manure, and gathered half a peck from them on May 13th, and I have continued to gather from them twice a week until late in June. The boxes are 3 ft. long, 11 in. wide, and 3 in. deep. This plan I shall continue to practise. I sowed under the protection of a wall on Feb. 13th Laxton's Harbinger, and gathered my first dish from it on June 3rd. This Pea comes into use earlier than any other. Criterion, one of the late Mr. Standish's seedlings, has been in bearing since June 22nd, beating William the First and Little Gem by about a week as regards earliness. It is a green marrow of the very richest flavour, and grows from 5 ft. to 5 ft. high. This Pea is destined to become a popular one.—R. Gilbert, *Burghley.*

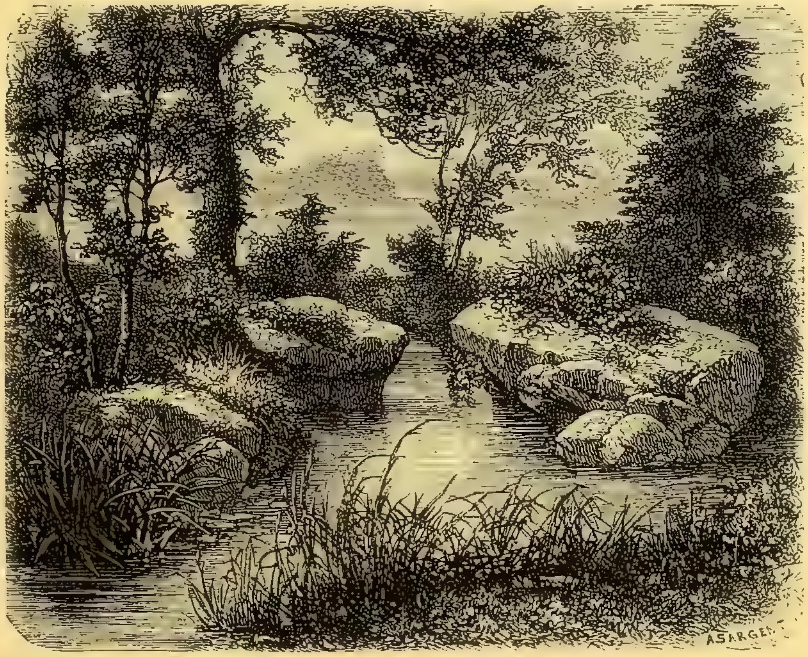
Potato Sprouts for Seed.—It is now upwards of forty years since I tested the use of "Potato shoots for seed," and I continued to do so for some years as an experiment—for at that time my Potato growing was confined to garden produce. I had the buds carefully picked from the tubers, after they had thrown out roots outside the parent bulb—at the same time I had other tubers cut for seed in the usual way. I planted three drills in the garden, side by side—one of cut tubers, one of sprouts, and one of small whole tubers. When at maturity, I daily dug up three stalks from each drill, counted, and weighed the produce of each three, and found that of the sprouts fully equal to any of the others, both in weight and in number. The second year I did the same, taking no pains to dibble the sprouts, but scattered them in the open drills, and covered lightly. I went further, for having found a heap of fine sprouts on the road—thrown over the wall by some sagacious cultivator who had got his seed Potatoes carefully turned and picked, and had thrown away the vigorous shoots—I had some barrowsful gathered up and scattered broadcast on a few ridges prepared for the purpose, and covered them with mould out of the furrows. The result was most satisfactory. The sprouts soon appeared over the ground, and the crop came to maturity much earlier than that from Potatoes planted the same day. It must be obvious to any one who considers the matter, that once the tuber has generated the sprout, it is no longer of use, for on digging the crop the tuber—whole or cut—will frequently be found whole and detached from the roots of the stalk. Why, then, pick off the first vigorous growth and plant the tuber to produce a second, and more puny and sickly one? Sprouts can be planted much later than the tubers, or, if at the same season, they will come to maturity earlier, because they are so much ahead of the tuber which, after being planted, has to throw out a bud or sprout.—"Toronto, Globe."

THE FLOWER GARDEN.

TALL PHLOXES.

These unquestionably rank amongst our most beautiful autumn flowers. They are quite hardy, are easily propagated, and they can adapt themselves to any locality or situation. Nothing can be more beautiful for a mixed border, and they are equally useful in pots for the embellishment of the greenhouse. Phloxes are divided into distinct sections, viz., the decussata group, which blooms from July to October, and the suffruticosa section, which flowers during June, July, and August. The kinds belonging to the first section are as a rule the favourites; they form magnificent pyramids of bloom from 18 in. to 3 ft. in height, the colours varying from pure white to the most glowing crimson-red, with many other shades of colour. The varieties of the suffruticosa group are altogether of a different habit; they are dwarfer, and the flowers, which are fragrant, are much more delicate in appearance, and they bloom earlier, too, than the decussata breed. Phloxes are easily propagated. Cuttings of them may be struck in spring and early summer. About the middle or end of March the plants will have made shoots 2 in. or 3 in. high, and then is the best time to take the cuttings. As many as are required should be taken from a plant, and inserted singly in thumb pots. If a very slight hotbed be at work this would be the best place in which to root the cuttings, but they would strike freely in a cold frame under handlights, or even in the open air, if shaded from bright sunshine. If under glass, whether on a hotbed or in a cold frame, they will, providing all goes well, be rooted in about three weeks, when they may have more air, and soon after be placed in a position in the open air. If they are intended for pot culture, as soon as the pots are filled with roots they should be shifted into 6-in. pots, in which they may be allowed to bloom. A very excellent compost for Phloxes consists of three parts sandy loam, one part leaf-mould, and one part rotten manure. During the period of growth the pots should be plunged up to the rims in coal ashes in the full blaze of the sun, but sheltered from cutting winds, and they should receive abundant supplies of water, both at the roots and overhead. Occasional supplies of manure water will considerably increase the size of the truss. As the shoots advance in growth they must be carefully staked, and each branch neatly tied. During the first year, if the plants be struck from cuttings only one shoot will be thrown up, but the second year a number of shoots will rise from the base. If the plants be grown for exhibition and the trusses be required very fine, about four shoots should be retained to each plant, and the rest cut clear away. Phloxes make grand ornaments either for planting in separate beds or in mixed borders; but when they are made a special object of culture, they should be grown in beds by themselves. A few plants in a mixed border form a pleasing feature, and afford a marked contrast to other herbaceous plants. It is in the mixed border that we grow our Phloxes, and as all the plants in the same bed are equally choice, they come in for a fair share of attention. Early in March is the best time to plant them, and the ground should be deeply dug and well enriched with good rotten manure, and throughout the growing season they should be liberally supplied with manure water. Where not offensive to the eye a mulching with half-rotten manure would be highly beneficial. When planted in beds the first year the plants should stand about 15 in. apart, but the following spring they should be replaced, for by this time they will have increased in size, and will require more room. The first year they will begin to bloom towards the middle of August, and continue for six or seven weeks, and the second year they will begin in July, and continue till the end of September. When the plants are in a healthy condition, the second season they will throw up a good number of shoots, when they should be reduced to five or six. When more are allowed to remain the flowers are not so fine. A stout stake should be placed to each plant, and as the shoots keep growing they must be securely tied to it. In exposed situations high winds make terrible havoc with Phloxes when this little duty is neglected. A succession of young plants should be kept up from cuttings. Dividing the old roots with the spade is a rough-and-ready way, but the plants are never so fine either in flowers or foliage as those raised from cuttings. Those who have only a limited knowledge of plant culture cannot do better than grow Phloxes; they do not require half the care of many of our half-hardy bedding plants, which must be wintered where artificial heat can be given. The following are good sorts, and well worth growing, viz.:—Admiration, A. F. Barron, Edith, Gladstone, Larina, aurantiaca superba, Gambetta, Queen of Whites, Madame Bonneau, Madame Hoste, Madame Beust, Mrs. Ware, Mrs. Laing, Triomphe de Parc de Neuilly, Lothair, Mons. Van Houtte, Madame la Comtesse de Turenne, and Walter Ware. There are many more the names of which are well worth recording, but these are some of the brightest and most continuous flowers.

K. R.



Rocky Brook.

Rocky Brook Mouth.—The accompanying sketch shows a successful attempt to ornament the mouth of a streamlet as it joins a piece of water. Here the placing of a few natural rocks gives an interesting diversity to the scene, and allows of the culture of a more striking variety of plants than could be otherwise grown. A small rocky bridge—a kind of stepping-stone bridge—crosses the streamlet a little this side of the rocks, and from this point of view the effect of the rocks, trees, &c., with the lake immediately beyond them is very interesting. The spot affords a home for a variety of water-side plants.

Dracæna australis in Flower.—I have this now in good bloom in the open air. Mr. George Vicary, who gave me the seed, has just called and says it is a very fine plant, and an unusual thing to see such a good blossom outside.—N. F. Barton, *Corsley House, Warminster.* [I have just seen this plant, which is beautifully in flower; it was planted in the flower garden about ten years ago. Its spike of bloom measures 5 ft. through at the base and 4 ft. 6 in. in length; the plant is about 8 ft. high up to where the bloom-spike shoots out. G. Berry, *Longleat*]

THE COLUMBINES OR AQUILEGIAS.

Those among us whose memories date far back in the present century will recollect how popular these beautiful hardy border flowers were at that time, and with what care they used to be cherished; but since then fashion has changed many things, and the present mode of embellishing both beds and borders is very different from what prevailed when such good old-fashioned plants as the above were more in favour than they now are. Without in any way decrying a system of decoration that has many admirers and which has done a vast amount of good in extending a love for flowers among the multitude who have first been attracted by gaudy colours, I do think it is much to be regretted that many choice hardy perennials and biennials that once had prominent positions, and which were so attractive in shrubbery and mixed borders should now be so seldom seen, for, after all, there is nothing to equal them either in form, colour, or interest; and being of a hardy enduring character, there is not that ever-recurring expense which there is in the case of bedding plants that have to be worked up annually and wintered under glass.

Common as many of the Aquilegias may appear to be from the persistent way in which they seed and propagate themselves, they are in certain situations even more desirable on that account, as, for instance, in semi-wild places, where with Foxgloves, hardy Geraniums, both native and foreign, and many other plants of similar habit and character, quite a wealth of beauty may be enjoyed, and that of a kind far more satisfying than is afforded by long lengths of ribbon border or the most intricately worked patterns which it is possible to devise. All that is required when it is desired to establish them in such places is to dig over a patch of ground and either to sow the seed at once, or raise plants in nursery beds and transplant them in the spring or as soon as they are large enough to be handled; but it should be borne in mind that only the more common and robust kinds will thrive without good cultivation. One or two of the choicest Alpine species of recent introduction only succeed really well in very favoured situations where the conditions under which they grow somewhat resemble those of their native habitat in regard to moisture, shade, and shelter. The Rocky Mountains of California appear to be rich in Columbines, if not in varieties at least in quality, as they have afforded us some of the choicest of the family, and as all seed and cross so freely, there will be no difficulty in raising others of a hardier constitution and possessing some of the characteristics for which these are so highly prized. Indeed, this has been done already, as many new hybrids are now to be had, which, if not equal to some of the Californian species, afford variety, and are therefore desirable on that account. Besides an endeavour to effect a cross with the view of raising new varieties, the aim of cultivators should be to keep pure those which we now have, and which, with such sportive tendencies as is natural to Columbines, can only be done by isolating the plants from which seeds are to be saved.

AQUILEGIA CŒRULEA.—This is by far the most beautiful and perhaps also the most difficult to keep and cultivate; it was introduced by Mr. Thompson, of Ipswich, to whom we are indebted for bringing not only this, but, also many other useful plants into notice. To get strong healthy plants that will flower freely, seeds of this kind should be sown annually, and treated after the manner of Canterbury Bells or other biennials, as it rarely does well after standing the second year, and in many cases dies out altogether at or before that time. The flowers are, however, so lovely and so useful for cutting, that it is deserving of any amount of trouble and attention to have it in good condition, a result which can only be attained by treating it in the manner just indicated. All the Columbines delight in a deep rich sandy soil where they can find plenty of moisture below for the roots, and as they make their growth early, the friendly shelter of shrubs or rock to keep off cold cutting winds and frosts is of great benefit, if not too near to rob them or restrict their root-room. The best way to treat them when they are to be grown in single patches in borders is to dig up the soil to a good depth, and, while doing so, to work in some rotten manures, keeping the same well down in order that the plants may have it to feed on as they come into flower. If when this is about to take place a slight mulching of leaf-mould be afforded and a soaking of water given, the bloom will be much finer and more lasting than it otherwise would be.

A. CHRYSANTHA.—This stands next in point of merit, and is one that affords a rich contrast as regards colour. It has canary-yellow flowers of the same form, and nearly as large as the foregoing. This by many is considered only a variety of A. cœrulea, but although the botanical distinction may not be great, they differ considerably in habit and time of flowering, A. chrysantha being at least a month later, and altogether of stronger growth and constitution. Although it has the same spur-like appendages, the flowers are smaller and not nearly so much distended as those in A. cœrulea, and these differences taken altogether are sufficient to warrant it being regarded as a distinct kind.

A. CANADENSIS.—This, till within the present century, was the only representative of the New World Columbines, and is, compared with the two kinds just named, a very slender grower, rarely exceeding 12 in. high. Its flowers, too, are much smaller, but what they lack in size is made up in brilliancy of colour, the sepals being scarlet and the petals bright yellow. A. canadensis lutea, introduced in 1835, is, as its name implies, a yellow form of canadensis, which it in other respects resembles.

A. KANAORIENSIS, a native of the Himalayas, is a delicately beautiful variety, having small flowers with white sepals and petals, the latter of which at the upper part gradually merge into a soft blue, and this deepens in intensity at the end of the spurs, thus giving the blooms a very ornamental character.

A. GLANDULOSA is a charmingly beautiful species, but one which does not succeed well except in favoured, cool, shady situations, where its roots can find plenty of depth and moisture. It is a native of Siberia, where it is found near the margins of mountain streams.

A. CALIFORNICA.—This, the strongest and most robust of all the American species, grows to a height of 3 ft., and bears flowers of a shell-like form, which, from their pendent position, are not seen to advantage unless turned up and examined.

A. VULGARIS, with which most of us are more or less familiar, used at one time to be an occupant of almost every cottage garden, and a more graceful or ornamental plant than it there formed cannot well be imagined. Although it has in most places been lost or eradicated to make room for others of more recent date, it is not yet surpassed either in utility or beauty by its more favoured rivals.

Now that we have these new comers from California, which have brought the Columbines again prominently into notice, no doubt they will ere long take the position which they formerly held. There are many more named kinds, but those enumerated above are the kinds most deserving of cultivation, and by growing them near together and sowing seed, there is no end to the variety of colour and form that may be obtained, especially among our native kinds, which are the most suitable for growing near the margins of drives or woodland walks, where, once fairly established, they would take of themselves. Excepting these, all the others should be looked on as biennials, and, as before observed, raised annually by sowing the seed under glass early in spring, and afterwards pricking the plants out and nursing them on till strong enough to plant out in August, or if sown at that time, to keep them under protection till the following spring; but the first is the best way of treating them, as they have the whole summer for making their growth.

J. Sheppard.

Climbing devoniensis Rose.—This is a beautiful Rose for covering a lofty wall, and at this season its flowers are lovely in a cut state. It is often complained of as being a shy bloomer, but it is a rampant grower, and in order to induce it to flower well, the young shoots, which in vigorous specimens are often 10 ft. or 12 ft. long, should be left their full length. The pruning should be confined to thinning out the wood, and removing occasionally an old branch to make room for the young shoots, as it is towards the points of these that the flowers are chiefly produced; no shortening should be permitted beyond removing a few inches of the soft points.—E. Hobday.

THE MILK THISTLE.

This old plant should find a place oftener in our gardens in these days of fine-foliaged plants than it does. It is hardy, easily-grown, biennial, and raised readily from seed. It looks exceedingly well in the mixed border before the flower-stems spring up. It is, however, most suitable for growing in a semi-wild state on dry banks and similar places.

LOBELIA SPECIOSA AND ITS VARIETIES.

In the open air and in pots the speciosa section of Lobelia is one of the largest and the most important; hardly any flower garden is now considered complete without one or more beds or borders being plentifully supplied with this beautiful Lobelia or some of its many varieties, such as Lustrous, Blue Stone, Blue King, and the lovely Paxtoniana, a white variety margined with blue. There are also one or two pure white Lobelias of the speciosa section with flowers nearly as large as the species. Of the smaller or pumila section of L. speciosa, magnifica, grandiflora, and Mrs. Murphy (pure white) are perhaps among the best. The double variety is also magnificent where it succeeds well, but it is very erratic, and hardly to be depended upon in beds or borders, sometimes forming a complete sheet of bloom, and at others the shoots running up through it, as it were, overpowering and preventing it from blooming, presenting the appearance of tufts of Grass. It seems difficult, perhaps impossible to guard against this peculiarity, inasmuch as where the plant is perfect in form and flowering one season, it becomes weedy-looking the next. This double blue is, however, a grand subject for culture, and under the superior climatal conditions that glass affords, it comes with greater certainty, and hardly any plant can equal the richness and beauty of this double Lobelia crowned as thickly as possible with its lovely balls of beautiful blue.

The chief points to start with in the successful culture of the Lobelia are good soil and well-grown established plants. The soil should be light and rich, and rest on a dry and perfectly drained bottom. The Lobelia enjoys abundance of water when in robust and free growth, but nothing is more fatal to its well-doing than stagnant water at the roots—if on a porous bottom it may be plentifully watered during a dry time in summer, without fear of injuring the roots, neither can the roots of Lobelia make way nor the plants thrive in a strong adhesive soil composed of clay or heavy loam, or if the compost be heavy, it must be lightened by a plentiful addition of leaf-mould, sand, or peat. The Lobelia thrives admirably in equal parts of rather sandy loam and leaf-mould with a fair admixture of sand to keep it open. Charcoal dust and peat also form capital additions to loam for their successful culture; likewise spent manure from Mushroom beds. A slight mulching of one-year-old sifted hotbed manure will be found a capital addition to beds or borders for keeping out the drought from and nourishing the roots of Lobelias through a dry season. One of the greatest difficulties, however, in carrying Lobelias in full beauty through the season is the freedom with which they produce seed and the tentative mode in which it is ripened—a pod at a time almost is the order of ripening. But where flowers are the object, this stage of maturity should never be reached. The moment the flowers fade they should be picked off, and so on persistently every week or ten days throughout the season. Of course the labour is great, but so is the reward. Few features in the flower beds or borders are more thoroughly enjoyable and satisfactory than a perfect band or small bed of any of the varieties of Lobelia speciosa from the middle of June till the frost clears the garden of its autumnal beauty. Of course this mode of culture prevents the saving of seeds, but this is of little moment, as it is better to purchase them than save them. If, however, any plants of unusual merit, distinctness, or improvement in size, colour, or substance of flower, appear, it is easy to perpetuate such, either by means of cuttings, rooted branches, or by lifting the plant, potting it, and placing it in a gentle bottom-heat until established; after that set it on a light, airy greenhouse or forcing-house shelf, when it may be increased by cuttings and root division to any extent in the spring, planting a stock on a piece of reserve ground for seed. This increase by cuttings, rooted side-shoots, or conservation of the old plants by potting a few of them in the autumn, is also the best method of preserving and increasing the stock of special varieties. The seeds of even the truest types vary considerably from each other, and also from the original, and to this inherent variability we owe the many kinds of Lobelia speciosa that add so largely to the enrichment of our flower gardens. It is, nevertheless, mortifying when white or semi-white flowers break forth among the truest strains of Blue King, or tall speciosas revert from the most carefully selected stock of L. pumila grandiflora. To avoid the risk of all this strike cuttings, plant rooted layers during the summer, or pot sufficient old plants for stock in the autumn. The Lobelia strikes roots freely in a brisk heat in a moist propagating pit or frame in spring. These cuttings should be potted or boxed off, and got into bulk by the end of May in exactly the same way as seedlings sown in heat in September, October, or February. Those who want early Lobelias from seed should sow in the autumn, and prick the seedlings off in boxes or pans, or shift them into thumb pots before winter. Store them on shelves near the light exposed to abundance of air, give another shift into small 6-in. pots in March into equal parts of leaf-mould and loam, and such plants will be perfect for planting by the end of May. Spring-sown seedlings may go into smaller-sized pots, and be planted rather more closely, but will not flower so early nor so well. On the whole, therefore, autumnal propagation, either by means of cuttings or seeds, is preferable to the sowing of the seeds in spring. For pot culture these autumn-sown plants are best. They are merely pushed on a little farther till they are large enough to fill a 6-in. or 8-in. pot; the first size is the best, the second as large as any pot should be for a single Lobelia speciosa. The taller-growing sections may be stopped a few times during the earlier stages of growth, to cause them to grow horizontally. At the final shift the plants should be kept well up in the pots, so as to allow the shoots to fall over the sides and cover them as they grow and flower. In the case of well-grown plants belonging to the taller sections, such as Paxtoniana, one of the chief merits of pot plants is that of drooping over and wholly hiding the pots. In the pumila section the plants are too dwarf to do this, but the rim may be entirely covered by a carpet of blue. The double blue is also of this dense habit, and is inimitable for the decoration of light-coloured marble, glass, or silver vases, or flat baskets. Some of the taller ones are also admirable for the furnishing of small hanging baskets or raised stands. The soil for Lobelias in pots should be equal parts leaf-mould and loam, mixed freely with silver sand or charcoal dust. The drainage should be clean and ample, and over it should be put a layer of small pieces of manure about the size of marbles, and almost as hard, such as that of cows at least two years old mixed with a little Cocoa-nut fibre refuse, to ensure a thorough and nourishing drainage. When the plants are in full growth and flower, they enjoy manure-water at least once a week; that made of a slight admixture of guano and soot suits them admirably. Having such a limited root-run, these plants must never once be allowed to become dry; and if carefully attended to they will continue long in beauty. When done flowering they may be cut down, repotted, and used for flowering again or for stock. With about three lots of Lobelias in pots to be brought on in succession, the conservatory, window garden, or sitting room need seldom be without the enlivening and enriching presence of these lovely plants from April to November. D. T. Fish.

HARDY PLANTS FOR NARROW BEDS.

In the immediate neighbourhood of large mansions or buildings it is sometimes desirable to cover certain places with some permanent living carpet, especially in positions where Grass cannot be got to grow satisfactorily, or where it is difficult to keep it in good condition by means of the mowing machine or scythe. Areas surrounded by stone curbing and its usual adjuncts are difficult to mow, and where the necessary operation of clipping has to be performed with shears, other subjects might be substituted for Grass that would have a good appearance at all seasons, and that would require less labour. We have some narrow borders enclosed with massive stone curbing, and the majority of these are planted with Irish Ivy, pegged down close until well established, when the only attention which it requires is clipping over occasionally, and the beautiful, fresh green groundwork which the young foliage presents can scarcely be surpassed by any plant with which I am acquainted. When the borders are wide enough to admit of its being done, a space is left in the centre for brightly coloured flowers, which the Ivy shows off to great advantage, and in spring a beautiful effect is produced by large masses of Snowdrops peeping through the foliage of the Ivy. These were planted with the Ivy, and have been allowed to remain undisturbed for years. Large specimens of Hydrangea and similar plants have an excellent effect plunged in this kind of border during summer, and replaced by Thuja aurea or Golden Yews in winter; in fact, any number of variations may be worked out on this simple but effective groundwork. As a good contrast to the above we have planted some panels with Golden Honeysuckle (Lonicera aurea reticulata), and treated it in every way like the Ivy. It is a charming subject, and in such positions is better variegated than on pillars or arches, as there is always an abundance of small spray-like shoots with the freshest and most effectively-marked variegation, induced by the frequent pinching and clipping to which it has to be subjected. On some very shallow panels, where the curbing is only 2 in. or 3 in. high, I have found the different varieties of Sedums or Stonecrops most effective as groundwork, as, though only planted thinly at first, they quickly form an even unbroken mass, and they have this advantage, that they will grow in shallow, dry soils where little else will succeed.

Henham. James Groom.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Thalia dealbata not Hardy.—In reply to "V" (see p. 523, Uol, xi.,) allow me to say that this plant has not proved hardy with me either here or at Bitton. I have tried several well-rooted plants of it, and though a successful grower of hardy aquatics in tubs for more than forty years, Thalia dealbata never would succeed with me —H. T. Ellacombe. *Clyst St. George, Devon.*

New Japanese Hollyhock.—This distinct variety was offered last year, I believe for the first time. It differs from the ordinary Hollyhock in its pyramidal form and dwarf growth, growing only about 2 ft. in height. The flowers are semi-double, and of a bright crimson-scarlet; it blooms during the summer months.—Peter Henderson.

Barometrical Flowers.—A sympathetic friend sent me a barometrical Hyacinth and Rose from Paris last week to keep me company during an attack of rheumatism. They are quite as clever weather prophets as the little man and woman who are always oscillating between going to market and staying at home. Like the chameleon, my flowers keep changing colour, and their language is interpreted thus:—When "fair" they are dark blue; when "changeable" a pale mauve; and when "rain" they become a bright pink. These curious and interesting effects are produced by some chemical agent into which they have been previously dipped.—"The World."

Heather in Nova Scotia.—Prof. Lawson adds to the localities of Calluna vulgaris in America six other stations, and in an interesting paper on the subject gives the following as his conclusions:—Calluna vulgaris is an indigenous plant, and still exists as such in very small quantity on the peninsula of Halifax. In Point Pleasant Park, at Dartmouth, and possibly in other places, the stations for the plant are artificial, but the plants are probably native. "The various traditions as to the foreign origin of the Heather are not unlikely to have been suggested by the desire to account for the presence of what was regarded as necessarily a foreign plant rather than by actual historical facts."—"American Naturalist."

PEACE.

"How are the mighty fallen! and the weapons of war perished!"

I.

Sing on, sweet bird, thy thankful psalm of peace,
Sing on, to Him, Who maketh wars to cease!
Armed men came, trampling down the corn and flowers,
Silenced thy mirth, and scared thee from thy bowers;—
And, where God's Beauty held its ancient reign,
Hate maimed and murdered, and thieves stripped the slain.

II.

Sing on! Once more, by His eternal Love,
Where swooped the vulture, coos the happy dove,—
Where shot-torn banners swayed 'mid battle-cries,
The fruit-trees blossom 'neath the deep blue skies,—
The shepherd whistles where the soldier fell,
Once more 'tis Eden, where it seemed as hell.

III.

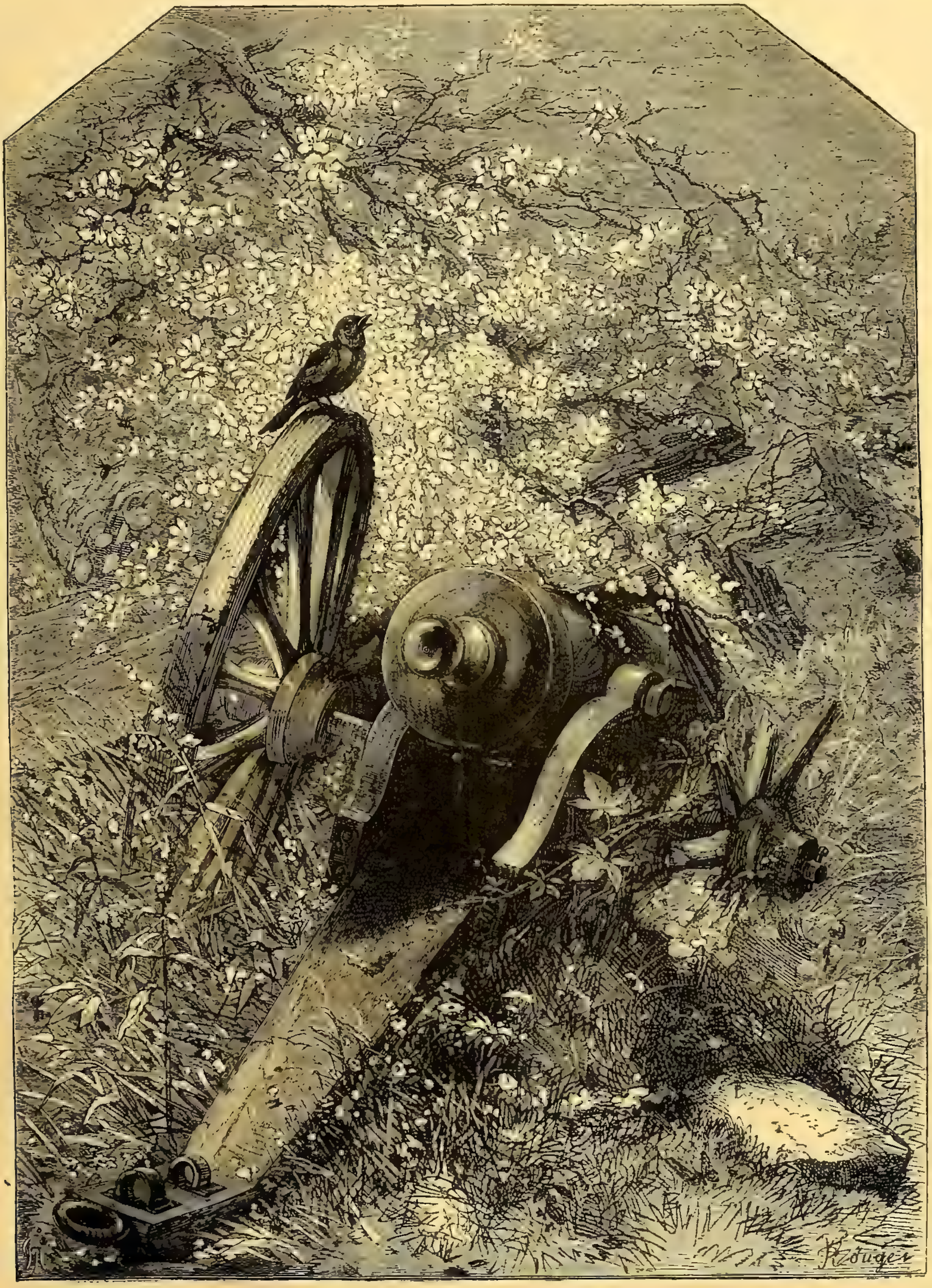
Sing to us men, that death shall die, and Life
And Peace prevail, and Victory, after strife.
Sing on, sweet bird, sing to our Faith and Hope,
That they shall conquer, who with sin shall cope.
"Peace at the last"—proclaim it in thy song,
For all who love the right and hate the wrong.

S. Reynolds Hole.

THE FIRST FUCHSIA.

(F. coccinea).

This well-known but lovely Fuchsia associates well with the ordinary occupants of a mixed border, and is so graceful and beautiful both in growth and bloom as to commend itself to the notice of the most casual observer. It readily adapts itself to any locality, provided the soil be not of the wettest and coldest description, and even then a slight covering of coal ashes after the stems have been cut down in autumn will suffice to protect the roots in winter. In favourable situations it often attains a height of 6 ft. From the axils of the leaves, which are of a fine green colour, beautifully tinged or veined with red, the flowers, which before they fully open are not unlike crimson drops, are produced in profusion during the greater part of the summer. In the "Botanical Magazine," vol. iii., t. 97, it is stated that this plant is a native of Chili, and that it was introduced to the Royal Gardens at Kew, in the year 1788, by Captain Firth. It takes the name of Fuchsia from Fuchs, a German botanist of great celebrity, author of "Historia Stirpium," in folio, published in 1542, containing woodcut illustrations of 516 plants, which, though merely done in outline, express the objects which they are intended to represent infinitely better than many laboured engravings of more modern times. The Fuchsia in question was at that time supposed to require the temperature of a hothouse; consequently we may presume that it was lost to cultivation prior to the ultimate purchase of a plant of it by Mr. Lee, the founder of the well-known nursery at Hammersmith. Of this transaction I find the following account written in an old scrap-book just as I heard it narrated at Knowsley twenty-five years ago. Mr. Lee having heard that in the window of an humble dwelling in Wapping, growing in a pot, was to be seen a beautiful plant with drooping flowers like earrings, his curiosity became excited, and he at once determined to proceed to the locality and see for himself. Once there, he could not disguise his admiration of the plant in question, and soon introduced himself to the owner, whom he found to be the wife of a sailor. After some preliminary conversation, he offered her a golden guinea in exchange for the plant, but this she refused, saying that her "Jack had brought it home from a foreign country, therefore she would not part with it for his sake." After some persuasion, however, and a promise that he would propagate a plant of the same for her, and at the same time placing in her hands all the cash he had about him (about ten guineas), he obtained possession of the plant, which was speedily propagated, and found, as may be imagined, a ready and profitable sale. The fine old Fuchsia gracilis rubra and F. Riccartoni may also be used for outdoor decoration, being equally hardy; but where a strong-growing, free-blooming kind is required for training against a wall or fence, there is, as yet, nothing to equal the old F. corallina, which is a cross between F. rupestris (a climbing species) and F. exoniensis, this latter being a cross between F. globosa and F. cordifolia. R. Bullen.



FLOWERS AND SONG VICTORIOUS.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Ferns.—Of late years Tree Ferns and other strong-growing kinds have been so much in fashion as to put in the shade the great number of small and more elegant sorts that met with favour when these beautiful plants first came into ordinary cultivation. This is much to be regretted, as amongst the dwarf species are to be found many of the most graceful forms of vegetable life in existence, and which are better suited to the space which numbers of amateurs have at command than the large-growing kinds. The raising of decorative plants of a permanent character from seed is always a pleasing operation to those who are fond of gardening, and one in which amateurs with a little practice will be sure to attain success. The seeds or, more correctly speaking, spores (as these germs from which Ferns increase naturally are not fully-developed seeds), can with little trouble be induced to vegetate in large numbers, but from their peculiar character they require different treatment to that employed with seeds of ordinary plants. The spores in the case of the majority of species are produced in little brown masses on the backs of the fronds; they are extremely small, more like particles of fine dust than living organisms. As they require from the time of sowing to be kept continually moist, and, if watered on the surface in the usual way, they are likely to be carried down too deeply in the soil for them to vegetate (and although young plants are moisture-loving plants, they need the (and although young plants are moisture-loving, they need the treatment:—Procure as many feeders (that is, shallow pans, like those sometimes placed under flower-pots) as the number of kinds of spores to be sown; also an equal number of smaller-sized seed-pans to stand in the feeders; place in the pans one-third of drainage material, covering it with some decayed Sphagnum or a few rotten leaves, filling them up to within ½ in. of the rims with half turfy peat full of finely-sifted vegetable fibre, rubbing the vegetable constituents of the soil with the hand through the riddle along with the earthy matter; to this add one-fourth of rough, gritty sandstone (a portion of it broken fine, the remainder left in bits about as large as marbles), and an equal part of charcoal broken in like manner; mix the whole together, pressing it firmly down with the hand or the bottom of an empty pot; take a fine-rosed can, and give as much water as will thoroughly saturate the whole, again smoothing the surface; and on it immediately sow the spores, scattering them on much thicker than ordinary seeds, as only a moderate percentage will grow; cover each pan with a bell-glass or a sheet of ordinary window glass cut so as to just cover the pan. There is a twofold object in thus covering the pots—to retain the moisture so as to keep the surface continually damp, and to prevent water from accidentally getting to it, which, as already observed, would have the effect of washing the spores too deeply into the soil. The pans must be placed in the feeders, which should be kept with about half-an-inch of water in the bottom, of which the soil will absorb a sufficient quantity to keep itself always moist. They should then be stood in a shady position in a stove or greenhouse, according to the warmth required by the respective species. Even the greenhouse kinds will be none the worse for an intermediate temperature, such as a late Vinery, but the pans should be on a moist bottom of sand or ashes, and not on dry shelves; if placed where the sun will have a direct influence on the glasses, shade them with paper, so as not to darken the surface too much. In the course of eight or ten weeks some kinds will begin to vegetate, but even if longer one need not despair of their appearance ultimately. Their first appearance will be indicated by diminutive green cups not larger than the head of a pin; these will increase in size and ultimately push up from their centres small green fronds. When the seedlings are large enough (which, if the spores be sown shortly after this time, will be in the course of the ensuing spring), they must be pricked off 1 in. apart in pans or pots drained and filled with sifted peat made porous with a mixture of sand and broken charcoal, kept continuously moist and slightly shaded; and, when of sufficient size, place them singly in small pots. Many amateurs are under the impression that if they have not got a stove or house devoted exclusively to the cultivation of Ferns, they can only succeed with a few of the commonest kinds, whereas there is a large number of the most beautiful species that will thrive better in a greenhouse temperature, with a fair amount of air and plenty of light, than if grown in a hotter temperature, for not only are they more robust and healthy under the cooler treatment, but they are much less subject to the attacks of thrips, which insect is the bane of greenhouse Ferns grown in heat; yet in the case of these during the first year after potting it will conduce considerably to their size and strength if they can be accommodated with an intermediate-house temperature, after which the darkest corner in the greenhouse should be selected for them. Not only will this be an advantage in leaving the lightest positions for other plants that require them, but a shady, somewhat confined situation where there is no necessity for giving air so as to come in direct contact with the Ferns, will be better suited to their requirements; yet here, as in the first stages of their existence, they should not be stood upon dry shelves, but on some moisture-holding material. The following are a selection of the most beautiful small and medium-growing species:—Adiantum cuneatum, A. gracillimum, A. hispidulum (pubescens), A. formosum, Davallia bullata, D. elegans, D. Novæ Zelandiæ, Nephrolepis exaltata, Pteris serrulata, and P. cretica albo-lineata. The above are the best and most suitable for cutting to mix with flowers for either bouquets or other floral arrangements; the Davallias named are especially useful through the autumn when the fronds are fully matured. The undermentioned are equally handsome, but not so generally used for cutting:—Adiantum sulphureum, A. scabrum, A. Capillus-Veneris, Asplenium Belangeri, A. bulbiferum, Cheilanthes dealbata (one of the most beautiful of silver Ferns), C. frigida, Davallia canariensis, D. dissecta, D. chærophylla, D. pyxidata, Lomaria gibba, L. Cycadifolia, Lygodium scandens, L. palmatum (the last two are climbing Ferns), Nothoclæna nivea, N. rufa, N. tenera, N. Eckloniana, Platycerium alcicorne, P. Stemmaria, Pteris scaberrula, P. aspericaulis, P. serrulata variegata, and P. serrulata corymbifera. The following are equally handsome and deserving of cultivation, but require an intermediate temperature:—Adiantum curvatum, A. Farleyense, A. tenerum, A. trapeziforme, Brainea insignis, Asplenium dimorphum, Cheilanthes elegans, Davallia Mooreana, D. scabra, Lomaria Zamiæfolia, Platycerium grande, Polypodium Musæfolium, Pteris tricolor, P. palmata, and P. rubricaulis; to these may be added Gleichenias—Speluncæ, rupestris, flabellata, and dichotoma—free-growing, distinct kinds; they will grow in a greenhouse, but do better continually in a little warmth, always moist at the roots, but with a drier atmosphere than most Ferns like. I have purposely omitted Gymnogrammas, the gold and silver varieties of which are much liked, but they require a considerable amount of heat to keep them in good condition through the winter, and they are not of use for cutting.

Peaches.—In this most exceptional season I have found it necessary to refer to the treatment requisite for Peaches on open walls, and though often spoken of I consider it advisable to urge still further upon those who have not had to manage this fruit during a summer so adverse as the present, the production and necessary ripening of the wood for next year's bearing. Owing to cold cutting winds, aphides, and blister, the trees in many places, where not closely attended to, have only within the last few weeks begun to make growth of a character calculated to produce fruit; there is no possibility of this late growth getting fully matured, except by careful attention and keeping it sufficiently thinned out so that every shoot retained may be fully exposed to the sun. I should recommend all the young wood that is thus allowed to remain to be kept tied or laid in to the wall, as there is no question that the heat given off from the bricks helps to ripen the wood much quicker than if it be left growing loose at a considerable distance from the face of the wall: but in doing this it is necessary to remind beginners in Peach culture that a few inches of the points of the shoots should be left at liberty so long as they keep extending, for, if tied in too closely, their growth is frequently stopped, in which case some of the lower eyes would break instead of forming bloom-buds. Use the syringe regularly to keep down red spider, which at this time generally makes its appearance, and unless more precautions than usual are taken with the trees, there is every probability that next summer's crop of fruit will not exceed the scanty supply of the present season.

Strawberries.—Late varieties of these, such as British Queen and Elton Pine, will be greatly benefited by liberal waterings. With this fruit, as with other things, mere sprinklings are worse than useless; where the time at command or the supply is insufficient to water further upon those amateurs who have not had to manage this fruit during a summer so adverse as the present, the necessary berries last formed and the last to ripen will keep on growing to a larger size; this watering will also greatly assist the production of runners required for planting shortly, which otherwise promise to be very late.

Asparagus, like all other things this year, has been more than usually late in springing, and through the scarcity of other vegetables, many will have been tempted to continue cutting longer than the welfare of the plants would warrant; where this has been the case, it is well to assist the growth as far as possible with liquid stimulants, the advantage of which to Asparagus is that they act so much quicker than solid manure, giving strength to the plants immediately they reach the roots; it is immaterial what is used to enrich the water thus given—horse or fowl manure, or guano—and as Asparagus is a marine plant, some salt added will be an advantage, in the proportion of a small handful to 3 gallons of the water; one copious soaking to the beds given early in the present month will generally be found sufficient, except in extraordinarily dry seasons. All weeds should now be removed by hand, for if allowed to remain, the liberal amount of manure given to Asparagus accelerates their growth apace.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

July 9.—Potting Celosias, Primulas, and herbaceous Calceolarias. Shifting Amarantus salicifolius, and potting off young Balsams. Sowing Bath Cos Lettuce, Digswell Prize, and dwarf green Curled Endive and Spinach. Placing pot Vines in house where they are to fruit, syringing and keeping them in a temperature of 70° at night. Earthing up Cucumbers and French Beans. Planting out Sunflowers.

July 10.—Potting Bouvardias. Basketing Aërides quinquevulnerum and repotting Odontoglossum Phalænopsis in Moss, top-dressing with peat. Sowing Nonpareil and Advancer Peas, Cabbages, and Early Horn Carrots. Putting in Pelargonium cuttings. Clipping shrubs, and giving Peach trees in pots a top-dressing of manure. Hoeing among fruit bushes and putting Epacrises in cold pits.

July 11.—Putting freshly-imported plants of Cattleya superba on blocks, and placing Dendrobium McCarthiæ in a bare basket. Sowing Six-week Turnips, Long-podded Negro, and Sir Joseph Paxton French Beans; also a late crop of Broad Beans. Putting in cuttings of Crassula coccinea. Watering and mulching Peach trees and training conservatory creepers. Placing Camellias in Peach-house where they can be shaded a little. Staking Peas.

July 12.—Potting Cypripedium Lowi in peat, Moss, and sand. Sowing Ne Plus Ultra Peas. Planting Ten-week Stocks. Salting Asparagus and Carrot beds. Nailing up Tomatoes and outdoor Figs and Vines, and watering Scarlet Runners with guano water.

July 13.—Shifting Odontoglossum Andersoni, and sowing a border of Early Horn Carrots and a box of Intermediate Stocks. Planting Asters. Putting in cuttings of Poinsettias. Clearing land of Early Peas, and digging it for late Cauliflowers; also preparing land on which to plant Endive. Watering French Beans with guano. Leaving night air on Vineries and Peach-houses in which fruit is ripening.

July 14.—Potting off seedling Musk plants, Coleus cuttings, and White Pinks. Sowing Mignonette in pots for autumn flowering, also Prickly Spinach, and Radishes. Planting Cauliflowers for late supply, and pricking out Wallflowers, clipping hedges and cutting Laurels. Pinching and pegging down plants in flower garden, and picking off all decayed flowers and leaves. Sowing Turnips, having previously watered the drills into which a little guano has been placed. Planting Neapolitan Cabbage Lettuce, Sweet Basil, and Marjoram. Putting in cuttings of Kalosanthes, clipping Arabis and Cerastium edgings, and digging land for late French Beans.

Hardy Flowers.

Auriculas.—Plants which were re-potted at the proper time are now busily engaged in putting forth new roots into the fresh soil, and, as a consequence, the outer leaves, put forth with so much vigour in early spring, are dying away and giving the plants an unhealthy appearance. There is, however, no cause for alarm; the plants may bear soft showers, but heavy drenching rains should be avoided. As the outside leaves decay they should be removed, and the surface soil should be stirred occasionally.

Asters.—Every effort should be made to induce these to make a strong uninterrupted growth by means of watering, mulching with manure, and sprinkling overhead in dry weather. As soon as the buds begin to form, a little weak manure-water will be found of great assistance.

Hollyhocks.—These are already in many instances diseased. It fastens on the lower leaves and eats them quite away, eventually destroying the flower-stalks also. Some assert that moisture at the roots will prevent the spread of the fungus, but this of itself, I fear, will not prove sufficient to stay its progress. It is stated that Mr. Worthington Smith's remedy for the Potato disease—a preparation to which he has given the name of Salus—has been applied to the Hollyhock disease with considerable advantage. In the case of this pest it is best used in solution; the plants should be well drenched overhead with it, and the undersides of the leaves washed also. A healthy growth is soon the result, and if the disease again appear, a second application will soon subdue it. A mulching with manure, and copious root waterings will greatly assist the Salus.

Pelargoniums.—As early blooming varieties of the show class go out of flower, they should be placed out-of-doors and kept a little dry. After a few days they may be cut down, and it is always well to allow the soil to become quite dry about the roots for two or three days before this is done, as the wound made by cutting away the branches will heal all the sooner. Then, when the cuts begin to heal over, the plants may be placed in a close frame to induce the branches to break vigorously. As soon as the shoots are 1 in. long, water should be withheld for a day or two, the plants turned out of their pots, the whole of the soil shaken out, and the main roots cut away to within 3 in. of the main stem, leaving some fibrous roots about them. The plants should then be re-potted in 5-in. or 6-in. pots, according to their size, in a soil consisting of good yellow loam, sand, leaf-mould, and a little well-decomposed manure, dry enough when used to crumble to pieces in the hand. After potting, the plants need to be kept close for a time to induce them to put forth roots, when they can have more air as the growth lengthens. The branches cut away make good cuttings, and if six or eight be put into a well-drained 4½-in. pot they will soon root and make excellent plants for potting in autumn to bloom in spring.

Pyrethrums.—A surprising improvement is taking place in the double varieties of the perennial Pyrethrum. I have just received a box of blooms of some new seedling varieties that are large in size, richly coloured, and singularly double—the centre being densely filled with quilled florets, and then surrounded with a double row of broad guard-petals. They have more than rivalled the Quilled German Aster, and they are much more satisfactory plants to grow. Let me describe a few of these flowers: Captain Boyton is cherry-red, large, and full; Captain Nares, magenta; Galopin, deep magenta, shaded with maroon; Kremhilda, pale pink, large, and full; Queen Mary, blush, flushed with pink, a charming variety; Ceres, bright pink, deepening to rose on the outer florets, large, and fine; Achille, rosy-pink, large and full, and fine in outline; Amethyst, amethyst-pink, brightening to violet, large and full; Cleopatra, pure white; and Duchess of Edinburgh, pale pink, tinted with violet and margined with silver. There are now a great number of varieties of double Pyrethrums in cultivation, and they take high rank as border flowers. Some of the brightly-coloured single varieties are very effective also, but generally they have a loose and more branching habit of growth, which is thought objectionable.

Rhodanthes.—In the exhibition of annuals in Regent's Park, these form a conspicuous feature. There is the old Rhodanthe Manglesi, and then come the more recent introductions, maculata, maculata alba, and atro-sanguinea. These are just now so full of flower that I give them the highest place among annuals suitable for pot culture and decorative purposes. Rhodanthes, too, are so lasting in character, and, even when the blooms are cut, they are of great service for winter decoration.

Violas.—A Viola that will succeed well in the London parks is one that can scarcely fail to be invaluable for bedding purposes. Such an one is Princess Teck, a pale mauve-coloured variety, which is now very fine in Battersea Park, and strongly recommended by Mr. Roger, the superintendent. D.

WELL-GROWN HERBACEOUS CALCEOLARIAS.

Calceolarias may be said to consist of two distinct sections the shrubby and herbaceous, which do not readily blend with each other. The shrubby sorts are well known as useful decorative plants for the flower garden during summer, although they are now less favourably regarded as bedding plants than they have been in times gone by, a circumstance due in a great measure to a difficulty which has in many localities been experienced with respect to their culture. The herbaceous section are seldom used as bedding plants, but are found to be exceedingly useful in greenhouses, conservatories, and even in sitting rooms, in all of which with attention they will continue to be highly ornamental for a period of not less than three or four months. Herbaceous Calceolarias may be readily increased by division, or cuttings inserted in light soil or sand, and placed in a close pit or frame, an operation which should be effected soon after the plants have ceased flowering; but unless it be with the view of increasing unusually meritorious kinds, propagation by this method is seldom resorted to at the present time, as herbaceous Calceolarias can now be raised from seed, and the plants so obtained will be found to possess every good quality that can be desired or expected. Mr. Barratt, of Bury St. Edmunds, has for years devoted attention to this section of Calceolarias, and his plants have this season been greatly in advance of those of former years. This result has been secured by a judicious system of selection, having reference to the habit of growth, form, texture, and healthy colour of the foliage, as well as the form, colour, size, and markings of the blooms. This season the foliage has been clean and healthy, the flower-stalks stout and robust, carrying abundance of large, well-formed blooms, the markings of which are of the most diversified character, and the colours vary from a straw-white or pale primrose-yellow to the richest crimson-magenta and deep maroon. So distinctly diversified, indeed, are the markings of the flowers, that out of a very extensive collection, it was found to be difficult to select two plants whose blooms were in all respects alike.

Mr. Barratt sows the seed about the middle of July, and the plants generally commence flowering about the end of April. He flowers them in pots 7 in. or 8 in. in diameter, and when large specimens are desired he uses pots of larger dimensions. The seeds of the Calceolarias being exceedingly small, a little care is necessary in sowing as well as in the treatment of the plants during the early stages of development. It is advisable to use for the purpose small seed-pans, or pots some 6 in. in diameter. These should be well drained, and filled with light rich soil, which should be pressed moderately firm, placing the rougher portions upon the Moss which should cover the crocks forming the drainage. The surface of the soil should be made perfectly smooth and level, and should then be well watered with a fine-rosed watering-pot. When this has been absorbed, the seeds should be sown upon the wet surface slightly pressed down; and they may have a slight portion of light soil or silver sand dusted upon them. Some growers, however, do not cover with soil at all, but merely cover the surface of the pot with a piece of glass which the rim will prevent from pressing upon the soil. The pot or pan should then be placed in a pit or frame, or under a hand-glass, so that it can be shaded from the sun, or the pot, with its glass covering, may be placed on the north side of a wall, where the seeds will speedily germinate. As soon as the plants are large enough to handle they should be pricked into pans of similar soil, and shaded from intense sunshine; afterwards they should be potted singly into 3-in. pots, from which they may in due time be transferred into pots of some 6 in. or 8 in. in diameter, in which, unless in cases where large specimens are desired, they may be flowered. They should be wintered in a light pit, or on a shelf in a greenhouse as close to the glass as possible; and as Calceolarias are very liable to the attacks of aphides, the structure containing them should be fumigated with Tobacco or good Tobacco paper, whenever these pests make their appearance.

Brugmansia planted out.

The soil used for the final shift may be composed of about two parts turfy loam, and one part well-rotted hotbed manure or leaf-soil, with the addition of a portion of silver or other sharp sand, should the loam be of a heavy or tenacious character; and as soon as the plants begin to throw up flower-stems they will be materially assisted by the use of clear soot-water, applied about twice a week, more particularly in cases where it is intended to flower the plants in comparatively small pots. As soon, however, as the blooms begin to be fully developed the use of soot or manure water of any kind should be discontinued, as it is possible that a persistence in its use might prove prejudicial to the exquisite markings of the flowers. P. Grieve.

Culford.

PLATE LXXXI.

THE WINTER-SWEET.

(TOXICOPHLÆA SPECTABILIS).

Drawn by Mrs. DUFFIELD.

This handsome Cape plant bears, as will be seen by the coloured plate, compact clusters of white blossoms, which in the case of well-grown plants, are produced freely. As a winter and spring-flowering greenhouse plant it well deserves attention, its blossoms, which are sweet-scented, being produced in succession for many weeks at a time when really good white flowers are scarce. Years ago it used to be grown in a few establishments, but became somehow lost to cultivation. Mr. B. S. Williams, of Holloway, however, recently re-introduced it, and brought it into notice by exhibiting finely-bloomed plants of it at South Kensington and elsewhere. In habit of growth and general appearance it bears some resemblance to a Posoqueria. The soil best suited to its growth is a mixture of equal parts of loam, peat, and leaf-mould, to which a little sharp sand should be added. It may be easily increased either by means of seeds or cuttings. Seedling plants, however, are never satisfactory, on account of the rampant habit which they assume previous to flowering. Healthy cuttings of half-ripened wood taken off in autumn and inserted in sharp sandy soil under a bell-glass, will, under favourable circumstances, make bushy, flowering plants the following spring.

The White Brugmansia Planted out.—All who aim at making the greenhouse or conservatory beautiful and picturesque with the smallest amount of trouble have a valuable aid in this well-known plant. Planted out in a bed or border of any kind, and without any special culture beyond allowing it plenty of root-room and water it quickly becomes a handsome bush. It is also generally so healthy and vigorous that year after year it is a source of pleasure. The long and fine white fragrant trumpets are produced plentifully, and are seen to advantage among the soft and ample fresh green leaves. They last a long time in flower, often appearing till nearly the end of the year. It is fitted for walls in certain positions as well as for beds and wide borders, and it is particularly valuable in large cool houses where more natural verdant effects are sought than are obtainable by means of plants in pots.

Pinus omorika.—A new European Conifer, to which the name of Pinus omorika is given, has been discovered by Dr. Pancic in the mountain regions of South-western Servia. It is said to attain a large size, and to be closely allied to P. orientalis.

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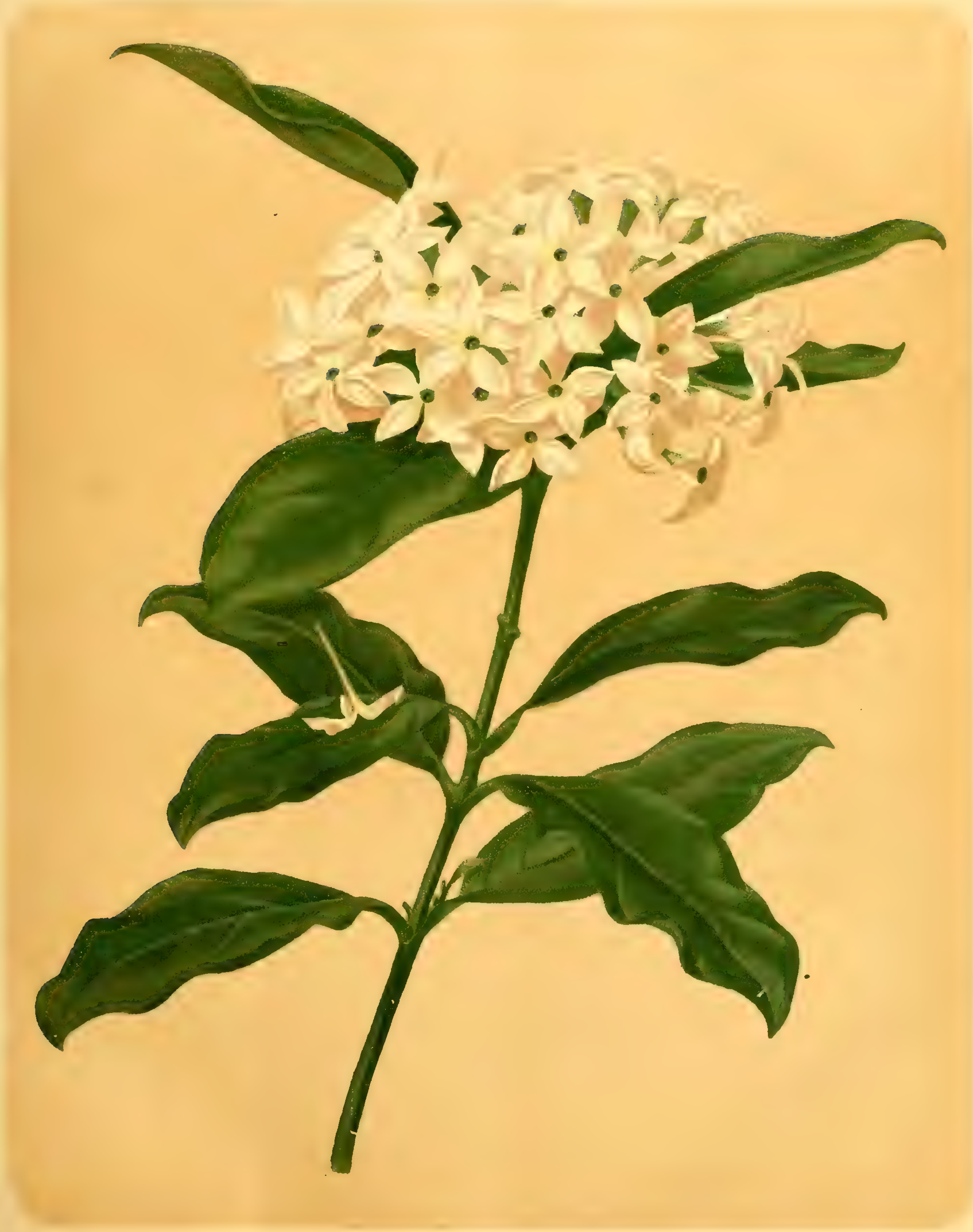
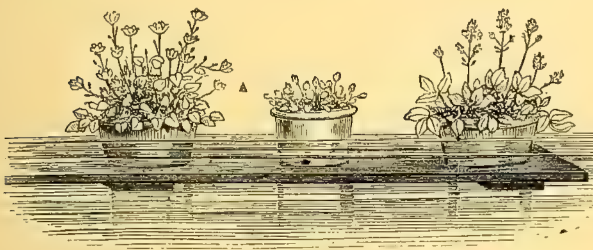


THE WINTER SWEET (TOXICOPHLÆA SPECTABILIS).

THE WILSON RAFT.

I have sent you a sectional illustration of the raft which in a tank in our garden at the cottage has proved so useful in the cultivation of bog and water plants. For more than a year I have tried experiments, and can now report perfect success. It will be readily admitted that in ordinary gardens growing marsh and water plants requires much care, and is by no means easy, and that many of even our native bog plants are of very great beauty, for example, the Buck Bean (Menyanthes trifoliata), and Grass of Parnassus (Parnassia palustris). I will now proceed to show what we have done, in the full hope that others will take up the idea and work it out more fully. Our first raft was very rough and small; it consisted of two pieces of Fir tree, connected by narrow boards; this had not much floating power, but the plants in the few pans which it carried gave good promise. We next made the present raft; this is 8 ft. square, and consists of nine planks, connected underneath by cross pieces, and having about 2 in. open spaces between; this was sunk by the weight of the pots and pans—until sufficiently weighted by pieces of rock—to 2 in. or 3 in. under the surface. On the raft bog plants in pots and water plants in pans were placed, with the result that, with no attention, they flourish as well as in their natural homes. After a time, when the wood had become saturated with water, and its floating power thus lessened, we nailed large pieces of Cork underneath the raft; this enabled it to carry a heavy load. The plants now growing on the raft number twenty, and were chosen as representative plants. There are the North American Pitcher-plant (Sarracenia purpurea), with three flowers out; Saxifraga palmata, Buck Beans (these were sent from America in ignorance of their flowering in this country), Bog Violets (Pinguicula vulgaris), Grass of Parnassus, several sorts of Mimulus—the Spotted Mimulus overgrows its pan, and with floating roots in the water is most beautiful—Lobelia cardinalis, Bog Myrtle, a large variety of Yellow Iris, and North American Lady's-slipper (Cypripedium spectabile). It is obvious that, while the raft floats between 2 in. and 3 in. under water, each pan or pot may be adjusted according to the requirement of its inhabitant; thus a water-plant is sunk to the full depth, while a plant requiring only moist soil is raised up by a piece of wood placed under its pot. Hitherto I have confined the experiments to simple cultivation; the next aim should be to add ornamental arrangement. Of course the weight of the pots and pans wastes much of the floating power of the raft: I propose superseding these by wood and Cork boxes, the diminished weight will allow the raft to be covered with plants, and to have the effect of a floating island; but probably a still more ornamental form would be a round raft of wood with Cork or wood fastened with copper nails to form sides, the bottom to have only small holes all over to admit the water; there might be cross divisions for different mixtures of soil suitable for the various plants, made not deep enough to show above the surface; in this case the whole raft would be covered with soil, and all woodwork, except the sides, hidden. In any garden with a pond this floating island might be moored to the bank or anchored. As I believe this raft to be a good idea, and that it will prove a real boon to the gardening world, I should like my name to be associated with it, and therefore propose to name it the "Wilson Raft."



The Wilson Raft for Water Plants.

Heatherbank, Weybridge Heath. George F. Wilson.

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 552, *Vol.* XI.).

Pomegranate.

(1) *Lafeu.* Go to, sir, you were beaten in Italy for picking a kernel out of a Pomegranate.
All's Well That Ends Well, act ii., sc. 3.

(2) *Juliet.* It is the nightingale, and not the lark,
That pierced the fearful hollow of thine ear;
Nightly she sings on yon Pomegranate tree.
Romeo and Juliet, act iii., sc. 5.

(3) *Francis.* Anon, anon, sir; look down into the Pomegranate, Ralph.
1st Henry IV., act ii., sc. 4.

There are few trees that surpass the Pomegranate in interest and beauty combined. "Whoever has seen the Pomegranate in a favourable soil and climate, whether as a single shrub or grouped many together, has seen one of the most beautiful of green trees; its spiry shape and thick-tufted foliage of vigorous green, each growing shoot shaded into tenderer verdure and bordered with crimson and adorned with the loveliest flowers; filmy petals of scarlet lustre are put forth from the solid crimson cup, and the ripe fruit of richest hue and most admirable shape" (Lady Calcott's "Scripture Herbal.") A simpler but more valued testimony to the beauty of the Pomegranate is borne in its selection for the choicest ornaments on the Ark of the Tabernacle, on the priest's vestments, and on the rich capitals of the pillars in the Temple of Solomon.

The native home of the Pomegranate is not very certainly known, but the evidence chiefly points to the north of Africa. It was very early cultivated in Egypt, and was one of the Egyptian delicacies so fondly remembered by the Israelites in their desert wanderings, and is frequently met with in Egyptian sculpture. It was abundant in Palestine, and is often mentioned in the Bible, and always as an object of beauty and desire. It was highly appreciated by the Greeks and Romans, but it was probably not introduced into Italy in very early times, as Pliny is the first author that certainly mentions it, though some critics have supposed that the *aurea mala* and *aurea poma* of Virgil and Ovid were Pomegranates. From Italy the tree soon spread into other parts of Europe, taking with it its Roman name of *Punica Malus*, or *pomum granatum*. *Punica* showed the country from which the Romans derived it, while *granatum* (full of grains) marked the special characteristic of the fruit that distinguished it from all other so-called Apples. Gerarde takes advantage of the name to give a queer instance of local etymology:—"Pomegranates grow in hot countries, towards the south in Italy, Spaine, and chiefly in the kingdom of Granada, which is thought to be so named of the great multitude of Pomegranates, which be commonly called *Granata*." This derivation, however, may be matched by the derivation of Yucatan, from the quantity of Yuccas growing there. The Pomegranate lives and flowers well in England, but when it was first introduced is not recorded. I do not find it in the old vocabularies, but Chaucer gives it a prominent place in "that gardeyn, wele wrought," "the garden that so lyked me."

> There were, and that I wote fulle well,
> Of Pomgarnettys a fulle gret delle,
> That is a fruit fulle welle to lyke,
> Namely to folk whaune they ben sike.
> *Romaunt of the Rose.*

Gerarde had it in 1596, but from his description it seems that it was a recent acquisition. "I have recovered," he says, "divers young trees hereof, by sowing of the seed or grains of the height of three or four cubits, attending God's leisure for floures and fruit." Three years later, in 1599, it is noticed for its flowers in Batte's "Dry Dinner" (as quoted by Brand), where it is asserted that "if one eate three small Pomegranate flowers (they say) for a whole yeare he shall be safe from all manner of eyesore;" and Gerarde speaks of the "wine which is pressed forth of the Pomegranate berries named Rhoitas or wine of Pomegranates," but this may have been imported. But, when introduced, it at once took kindly to its new home, so that Parkinson was able to describe its flowers and fruits from personal observation. In all the southern parts of England it grows very well, and is one of the very best trees we have to cover a south wall; it also grows well in towns, as may be seen at Bath, where a great many very fine specimens have been planted in the areas in front of the houses, and have grown to a considerable height. When thus planted and properly pruned the tree will bear its beautiful flowers from May all through the summer; but generally the tree is so pruned that it cannot flower. It should be pruned like a Banksian Rose, and other plants that bear their flowers on last year's shoots, *i.e.*, simply thinned, but not cut back or spurred. With this treatment the branches may be allowed to grow in their natural way without being nailed in, and if the single-blossomed species be grown, the flowers in good summers will bear fruit. Last year (1876) I counted on a tree in Bath more than sixty fruit; the fruits will perhaps seldom be worth eating, but they are curious and handsome. The sorts usually grown are the pure scarlet (double and single), and a very double variety with the flowers somewhat variegated. These are the most desirable, but there are a few other species and varieties, including a very beautiful dwarf one from the East Indies, that is too tender for our climate out-of-doors, but is largely grown on the Continent as a window plant.

Pomewater (see Apple).

Popering (see Pear).

Poppy.

Iago. Not Poppy or Mandragora,
Nor all the drowsy syrups of the world
Shall ever medicine thee to that sweet sleep
Which thou own'dst yesterday.
Othello, act iii., sc. 3.

The Poppy had of old a few other names, such as Cornrose and Cheese-bowls (a very old name for the flower), and being "of great beautie, although of evil smell, our gentlewomen doe call it Jone Silverpin." This name is difficult of explanation, even with Parkinson's help, who says it means "faire without and foule within," but it probably alludes to its gaudy colour and worthlessness. But these names are scarcely the common names of the plant, but rather nicknames; the usual name is and always has been Poppy, which is an easily-traced corruption for the Latin *papaver*, the Saxon and early English names being variously spelt *popig* and *papig*, *popi* and *papy*; so that the Poppy is another instance of a very common and conspicuous English plant known only or chiefly by its Latin name anglicised.

Our common English Poppy "being of a beautiful and gallant red colour," is certainly one of the handsomest of our wild flowers, and a Wheat field with a rich undergrowth of scarlet Poppies is a sight very dear to the artist, while the weed is not supposed to do much harm to the farmer. But this is not the Poppy mentioned by Iago, for its narcotic qualities are very small; the Poppy that he alludes to is the Opium Poppy (P. somniferum). This Poppy was well known and cultivated in England long before Shakespeare's day, but only as a garden ornament; the opium was then, as now, imported from the East. Its deadly qualities were well known. Spenser speaks of the plant as the "dull Poppy," and describing the Garden of Mammon, he says:—

There mournful Cypress grew in greatest store,
And trees of bitter gall, and Heben sad,
Dead-sleeping Poppy, and black Hellebore,
Cold Coloquintida.

And Drayton similarly describes it—

Here Henbane, Poppy, Hemlock here,
Procuring deadly sleeping.

The name of opium does not seem to have been in general use, except among the apothecaries, and I believe that Milton is the first writer of eminence that uses it.

Which no cooling herb
Or medicinal liquor can asswage,
Nor breath of vernal air from snowy Alp;
Sleep hath forsook and given me o'er
To death's benumming opium as my only cure.
Samson Agonistes.

Many of the Poppies are very ornamental garden plants. The pretty yellow Welsh Poppy (Meconopsis cambrica), abundant at Cheddar Cliffs, is an excellent plant for the rockwork, where, when once established, it will grow freely and sow itself; and for the same place the little Papaver alpinum, with its varieties, is equally well suited. For the open border the larger Poppies are very suitable, especially the great Oriental Poppy (P. orientale) and the grand scarlet Siberian Poppy (P. bracteatum), perhaps the most gorgeous of hardy plants, while among the rarer species of the tribe we must reckon the Meconopses of the Himalayas (M. Wallichi and M. nepalensis), plants of singular beauty and elegance, but very difficult to grow and still more difficult to keep, even if once established. Within the last three years they have been successfully grown at Kew and in a few other places, and have been proved to be perfectly hardy, for they have been grown in wonderful beauty in Mr. Elwes' garden at Miserden, one of the coldest villages on the Cotswold, but whether they can be permanently preserved, time only can show. Besides these Poppies, the large double garden Poppies are very showy and of great variety in colour, but they are only annuals.

Potato.

(1) *Thersites.* How the devil Luxury, with his fat rump and Potato-finger, tickles these together.
Troilus and Cressida, act v., sc. 2.

(2) *Falstaff.* Let the sky rain Potatoes; let it thunder to the tune of green sleeves, hail kissing comforts, and snow Eringoes.
Merry Wives of Windsor, act v., sc. 5.

The chief interest in these two passages is that they contain almost the earliest notice of Potatoes after their introduction into England. The generally received account is that they were introduced into Ireland in 1584 by Sir Walter Raleigh, and from thence brought into England; but the year of their first planting in England is not recorded. They are not mentioned by Lyte in 1586. Gerarde grew them in 1597, but only as curiosities, under the name of Virginian Potatoes (Battata Virginianorum and Pappas), to distinguish them from the Spanish Potato, or Convolvulus Battatas, which had been long grown in Europe. They seem to have grown into favour very slowly, for half a century after their introduction, Waller still spoke of them as one of the tropical luxuries of the Bermudas.

With candy'd Plantains and the juicy Pine,
On choicest Melons and sweet Grapes they dine,
And with Potatoes fat their wanton swine.
The Battel of the Summer Islands.

Potato is a corruption of Batatas or Patatas.

As soon as the Potato arrived in England, it was at once invested with wonderful restorative powers, and in a long, exhaustive note in Steevens' Shakespeare, Mr. Collins has given all the passages in the early writers in which the Potato is mentioned, and in every case they have reference to these supposed virtues. These passages, which are chiefly from the old dramatists, are curious and interesting in the early history of the Potato, and as throwing light on the manners of our ancestors; but as in every instance they are all more or less indelicate, I, of course, refrain from quoting them here.

As a garden plant, we now restrict the Potato to the kitchen garden and the field, but it belongs to a very large family, the Solanaceæ or Nightshades, of which many members are very ornamental, though as they chiefly come from the tropical regions, there are very few that can be treated as entirely hardy plants. One, however, is a very beautiful climber—the Solanum jasminoides from South America, and quite hardy in the South of England. Trained against a wall it will soon cover it, and when once established will bear its handsome trusses of white flowers with yellow anthers in great profusion during the whole summer. A better known member of the family is the Petunia, very handsome, but little better than an annual. The pretty Winter Cherry (Physalis Alkekengi), is another member of the family, and so is the Mandrake (see Mandrake). The whole tribe is poisonous, or at least to be suspected, yet it contains a large number of most useful plants, as the Potato, Tomato, Tobacco, Datura, and Cayenne Pepper.

Primrose.

(1) *Queen.* The Violets, Cowslips, and Primroses
Bear to my closet.
Cymbeline, act v., sc. 2.

(2) *Queen Mary.* I would be blind with weeping, sick with groans,
Look Pale as Primrose, with blood-drinking sighs,
And all to have the noble duke alive.
2nd Henry VI., act iii., sc. 2.

(3) *Arviragus.* Thou shalt not lack
The flower that's like thy face—pale Primrose.
Cymbeline, act iv., sc. 2.

(4) *Hermia.* In the wood where often you and I
Upon faint Primrose-beds were wont to lie.
Midsummer Night's Dream, act i., sc. 1.

(5) *Perdita.* Pale Primroses
That die unmarried ere they can behold
Bold Phœbus in his strength.
Winter's Tale, act iv., sc. 3.

(6) *Ophelia.* Like a puffed and reckless libertine,
Himself the Primrose path of dalliance treads
And recks not his own rede.
Hamlet, act i., sc. 3.

(7) *Porter.* I had thought to have let in some of all professions that go the
Primrose way to everlasting fire.
Macbeth, act ii., sc. 3.

(8) Witness this Primrose bank where on I lie.
Venus and Adonis.

Whenever we speak of spring flowers, the first that comes into our minds is the Primrose. Both for its simple beauty and for its early arrival among us we give it the first place over

Whatsoever other flowre of worth
And whatso other hearb of lovely hew,
The joyous Spring out of the ground brings forth
To cloath herself in colours fresh and new.

It is a plant equally dear to children and their elders, so that I cannot believe that there is any one (except Peter Bell) to whom

A Primrose by the river's brim
A yellow Primrose is to him—
And it is nothing more.

—rather I should believe that W. Browne's "Wayfaring Man" is a type of most English countrymen in their simple admiration of the common flower—

As some wayfaring man passing a wood,
Whose waving top hath long a sea-mark stood,
Goes jogging on and in his mind nought hath,
But how the Primrose finely strews the path,
Or sweetest Violets lay down their heads
At some tree's roots or mossy feather beds—
Britannia's Pastorals—(Cotemporary with Shakespeare).

It is the first flower, except perhaps the Daisy, of which a child learns the familiar name; and yet it is a plant of unfailing interest to the botanical student, while its name is one of the greatest puzzles to the etymologist. The common and easy explanation of the name is that it means the first Rose of the year—but like so many explanations that are derived only from the sound and modern appearance of a name, this is not the true account. The full history of the name is too long to give here, but the short account is this—"The old name was Prime Rolles—or primerole. Primerole is an abbreviation of Fr., *primeverole:* It., *primaverola*, diminutive of *prima vera* from *flor di prima vera*, the first spring flower. *Primerole*, as an outlandish unintelligible word, was soon familiarized into *primerolles*, and this into *primrose*"—(Dr. Prior). Yet though the name Primrose was not applied to the flower, it was an old English word, used to show excellence.

A fairer nymph yet never saw mine eie,
She is the pride and Primrose of the rest—
Spenser—(Colin Clout).

Was not I (the Briar) planted of thine own hande
To bee the Primrose of all thy lande,
With flow'ring blossomes to furnish the prime
And scarlet berries in summer time—
Spenser—(Shepherd's Calendar, Februarie).

It was also a flower name, but not of our present Primrose, but of a very different plant. Thus in a hommale of the 15th century we have "hoc ligustrum, a Primerose," and in a Pictorial Vocabulary of the same date we have "hoc bigustrum, A^{ce} a Prymrose"—and this name for the Privet lasted with a slight alteration into Shakespeare's time. In Tusser's "Husbandry" we have "set Privey or Prim" (September Abstract), and

Now set ye may
The Box and Bay
Hawthorn and Prim
For clothe's trim—(Jauuary's Abstract).

And so it is described by Gerarde as the Privet or Prim Print (*i.e.* primé printemps), and even in the 17th century, Cole says of ligustrum "This herbe is called Primose." When the name was fixed to our present plant, I cannot say, but certainly before Shakespeare's time, though probably not long before. It is rather remarkable that the flower, which we now so much admire, seems to have been very much overlooked by the writers before Shakespeare. In the very old vocabularies it does not at all appear by its present Latin name, Primula veris, but that is perhaps not to be wondered at, as nearly all the old botanists applied that name to the Daisy. But neither is it so much noticed by its English name. I can only find it in two of the vocabularies. In an English Vocabulary of the 14th century is "Hæc pimpinella, A^{e} primerolle—but it is very doubtful if this can be our Primrose, as the Pimpernel of old writers was the Burnet. But in the treatise of Walter de Biblesworth (13th century) is

Primerole et primeveyre (cousloppe)
Sur tere aperunt en tens de veyre.

I should think there is no doubt this is our Primrose. Then we have Chaucer's description of a fine lady—

Hire shoon were laced on her legges hie
She was a Primerole, a piggenie,
For any lord to liggen in his bedde,
Or yet for any good yeman to wedde.
Canterbury Tales, i., 3267.

I have dwelt longer than usual on the name of this flower, because it gives us an excellent proof of how much literary interest may be found even in the names of our common English plants.

But it is time to come from the name to the flower. The English Primrose is one of a large family of more than fifty species, represented in England by the Primrose, the Oxlip, the Cowslip, and the Bird's-eye Primrose of the north of England and Scotland. All the members of the family, whether British or exotic, are noted for the simple beauty of their flowers, but in this special character there is none that surpasses our own. "It is the very flower of delicacy and refinement; not that it shrinks from our notice, for few plants are more easily seen, coming as it does when there is a dearth of flowers, when the first birds are singing, and the first bees humming, and the earliest green putting forth in the March and April woods; and it is one of those plants which dislikes to be looking cheerless, but keeps up a smouldering fire of blossom from the very opening of the year, if the weather will permit" (Forbes Watson). It is this character of cheerfulness that so much endears the flower to us; as it brightens up our hedgerows after the dulness of winter, the harbinger of many brighter perhaps, but not more acceptable beauties to come, it is the very emblem of cheerfulness. Yet it is very curious to note what entirely different ideas it suggested to our forefathers. To them the Primrose seems always to have brought associations of sadness, or even worse than sadness, for the "Primrose path" and "Primrose ways" of Nos. 6 and 7 are meant to be suggestive of pleasures, but sinful pleasures.

Spenser associates it with death in some beautiful lines in which a husband laments the loss of a young and beautiful wife—

Mine was the Primerose in the lowly shade!

. . . . . .

Oh! that so fair a flower so soon should fade,
And through untimely tempest fade away.

And in another place his only epithet for it is "green," which quite ignores its brightness—

And Primroses greene
Embellish the sweete Violet.

Shakespeare has no more pleasant epithets for our favourite flower than "pale," "faint," "that die unmarried;" and Milton follows in the same strain, yet sadder. Once, indeed, he speaks of youth as "Brisk as the April buds in Primrose season" ("Comus,") but only in three passages does he speak of the Primrose itself, and in two of these he connects it with death—

> Bring the rathe Primrose that forsaken dies.
>
> . . . . . .
>
> And every flower that sad embroidery wears.
>
> *Lycidas.*

> O fairest flower, no sooner blown but blasted,
> Soft silken Primrose fading timelesslie ;
> Summer's chief honour if thou hadst outlasted
> Bleak winter's force that made thy blossoms drie.
> *On the Death of a Fair Infant.*

His third account is a little more joyous—

> Now the bright morning star, daye's harbinger,
> Comes dancing from the East, and leading with her
> The flowery May, who from her green lap throws
> The yellow Cowslip and the pale Primrose.
> *On May Morning.*

And nearly all the poets of that time spoke in the same strain, with the single exception of Ben Jonson and the two Fletchers. Jonson spoke of it as "The glory of the spring." Giles Fletcher says—

> Every bush lays deeply purfumed
> With Violets ; the wood's late wintry head,
> Wide flaming Primroses set all on fire.

And Phineas Fletcher—

> The Primrose lighted new her flame displays,
> And frights the neighbour hedge with fiery rays.
>
> And here and there sweet Primrose scattered.
>
> . . . . . .
>
> Nature seemed work'd by Art, so lively true
> A little heaven or earth in narrow space she drew.

I can only refer very shortly to the botanical interest of the Primula, and that only to direct attention to Mr. Darwin's paper in the "Journal of the Linnean Society," 1862, in which he records his very curious and painstaking inquiries into the dimorphism of the Primula, a peculiarity in the Primula that gardeners had long recognised in their arrangement of Primroses as "pin-eyed" and "thrum-eyed." It is perhaps owing to this dimorphism that the family is able to show a very large number of natural hybrids. These have been carefully studied by Professor Kerner, of Innspruck, and it seems not unlikely that a further study will show that all the European so-called species are natural hybrids from a very few parents.

Yet a few words on the Primrose as a garden plant. If the Primrose be taken from the hedges in November, and planted in beds thickly in the garden, they make a beautiful and true display of flowers and foliage from February till the beds are required for the summer flowers ; and there are few of our wild flowers that run into so many varieties in their wild state. In Pembrokeshire and Cardiganshire I have seen the wild Primrose of nearly all shades of colour, from the purest white to an almost bright red, and these can all be brought into the garden with a certainty of success and a certainty of rapid increase. There are also many double varieties, but all of these are more often seen in cottage gardens than elsewhere ; yet no gardener need despise them.

One other British Primrose, the Bird's-eye Primrose, almost defies garden cultivation, though in its native habitats in the north it grows in most ungenial places. I have seen places in the neighbourhood of the bleak hills of Ingleborough, where it almost forms the turf ; yet away from its native habitat it is difficult to keep, except in a greenhouse. For the cultivation of the other non-English species, I cannot do better than refer to an excellent paper by Mr. Niven in The Garden for January 29, 1876, in which he gives an exhaustive account of them.

I am not aware that Primroses are of any use in medicine or cookery, yet Tusser names the Primrose among "seeds and herbs for the kitchen," and Lyte says "the Cowslips, Primroses, and Oxlips are now used dayly amongst other pot herbes, but in physicke there is no great account made of them."

Prunes (See Plums).

H. N. Ellacombe.

(To be continued).

THE KITCHEN GARDEN.

SOWING TURNIPS IN DRY WEATHER.

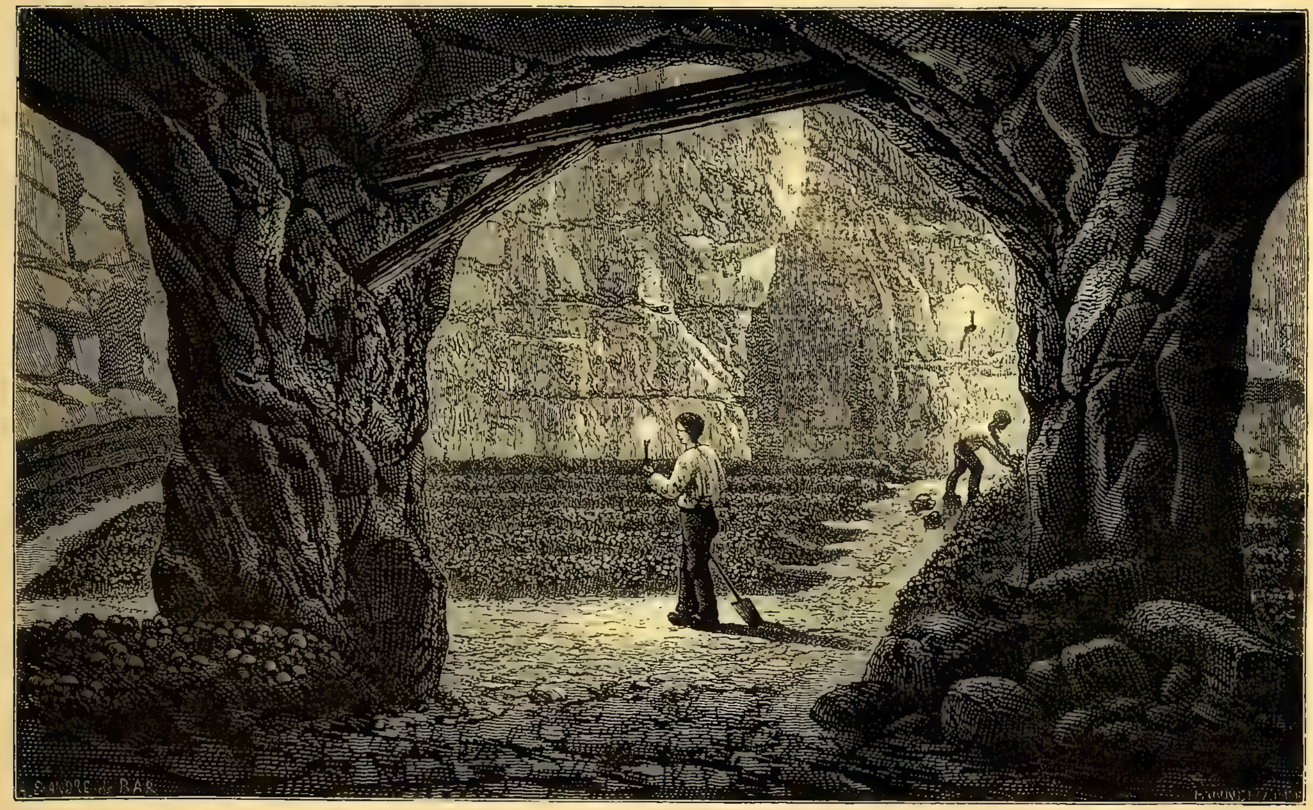
It often happens at this season, when the main crop of Turnips for the winter's supply requires to be sown, that the land is in a dry, rough, harsh condition, totally unfit for the germination of small seeds. Some may say, wait for rain, and this I have sometimes done ; but I have never been altogether satisfied that I have acted rightly in doing this, for not only are delays dangerous, but frequently at this season if we have a passing shower, it is of no real benefit in the case of our porous soil. I find it to be a better plan to sow about the right time, and if the land be dry and no immediate prospect of rain, to break down the soil so that the drills can be drawn, and, before sowing the seeds, well water with liquid manure, made with guano and salt, about 2 lb. of each to 40 gallons of water, covering the seeds with a mixture of fine soil and ashes or burnt earth, saved for such a purpose when the rubbish-heaps are cleared up. This moistening of the soil in the drills and for some distance down with liquid manure has a wonderful effect on the vigour of the plants all through the season. Of course, at the time it involves a little extra trouble, but then reliance may be placed upon having a crop, and it is worth something to feel free from anxiety on that head—especially in a place where the Turnip-fly is troublesome if the plants be weakly. I am rather partial to this mixture of guano and salt for many things on our soil. Lettuce, Spinach, and many other crops of which a succession is required to be kept up are greatly benefited by having the drills soaked with liquid manure at the time of sowing ; it enables them to make a start, and when rain does come they have the full benefit of it. Waiting for rain is, in most cases I think, a mistake ; even in planting out Broccoli or Winter Greens two or three good waterings will usually be sufficient to establish them, drawing a little dry earth round the stems after the last watering to check evaporation ; and everyone knows how much cleaner and pleasanter the work can be done when the surface is dry. Although I have only mentioned guano and salt, nothing that has any value as a manure need come amiss. Soot in a liquid form, applied in the drills with the seeds, is very beneficial, as the crop at once appreciates its presence.

Ramsey Abbey. E. Hobday.

CULTURE OF HORSERADISH.

Horseradish succeeds best in a deep, rich, sandy soil. The finest Horseradish which I ever saw was grown in mud thrown out from the River Lea ; by the side of the river was a large bed of Horseradish that had been growing there for a number of years, the digging of it up, when wanted, being generally done haphazard wherever there were likely to be the best sticks. It became necessary to clean out the river, and mud was thrown over the bed of Horseradish to a depth of from 2 ft. to 3 ft. Next year the Horseradish came up through the mud in the shape of clean, straight sticks, from 2 ft. to 3 ft. in length, and in every way excellent. The general way, however, of growing Horseradish is to trench a piece of ground 2 ft. deep, adding plenty of rotten manure, and in the spring to plant crowns with 2 in. or 3 in. of straight root attached to them, or, in the event of not having sufficient crowns, to use pieces of straight root 4 in. or 5 in. long. The best way is to plant in rows 12 in. or 15 in. apart, the sets being 8 in. or 9 in. asunder in the rows ; holes may be made with a stout stick or crowbar 15 in. or so deep, and the set dropped in and covered with a little fine soil. Some prefer a ridge similar to that between Celery trenches, planting small, long roots, 14 in. or 15 in. long, in three rows, and as the sticks are dug up for use the ridge is made up and planted again, therefore a succession of good Horseradish can always be obtained. By the following method of growing Horseradish sticks that measure from 5 in. to 8 in. in circumference may, it is said, be produced in ten months. During February take small, straight pieces of the roots about the size of, or somewhat smaller than, the little finger ; from these remove all the side-shoots and roots, and form them into straight sets from 8 in. to 14 in. long. Prepare a piece of ground by deeply digging and well manuring it, and plant the sets in it in rows 3 ft. apart, and from 12 in. in the rows; the sets must be planted in a slanting position, and must not be more than 2 in. beneath the surface. The ground at all times must be kept free from weeds, and should be well watered in very dry weather. Planting the set at an angle—in fact, in nearly a horizontal position—is, no doubt, the great secret of success, for, being placed so near the surface, it has the full benefit of the sun's heat, which, as a matter of course, induces it to make rapid growth long before that which is planted according to the ordinary method—*i.e.*, from 18 in. to 20 in. deep, and in a perpendicular position—reaches the surface.

One cultivator with whom I am acquainted inserts a common round drain-tile a couple of inches in the ground, fills it with fine earth, and plants a set near the top of the tile and 10 in. above the surface, a plan by which digging for the product is saved, and a fine clean stem is the result. Another says that by placing leaves or litter on the tops of Horseradish crowns 2 ft. or so thick, the plants grow through them in the course of the summer, making small white roots the thickness of one's finger, which are as tender as spring Radishes. During the winter months, a supply of Horseradish should always be at hand, stored away in sheds, &c., and covered with dry soil, or sand, in the same way as Carrots, &c. The salesmen in Covent Garden Market have a large demand for Horseradish, judging by the immense quantities of it which are imported from Holland. Huge heaps of it may be seen on market mornings about Christmas time, consisting of bundles containing from twenty to twenty-five sticks each, of first-rate quality, tied up with small but strong withies. These bundles arrive packed firmly in large barrels, and in many cases the heads are found to have made a considerable amount of growth on their way, which, of course, is blanched as white as Seakale. The sticks are not washed before being packed, but are placed in the barrels apparently as they are dug from the ground with a quantity of soil adhering to them. It is somewhat remarkable that a crop so easily grown as Horseradish should be sufficiently remunerative to pay for importation, whilst in London market gardens comparatively little of it is grown. The reason for this may probably be that there is only a demand of any importance at certain seasons of the year, December being the principal month in which it is required. It might perhaps, therefore, scarcely do for market gardeners near London, who have to pay such high rents to occupy a very large portion of their ground with such crops as Horseradish, that will not admit of other crops being grown amongst it, and for which the sale is somewhat uncertain. Indeed, only a few salesmen who do business with hotels and similar places can dispose of it in any quantity; and Horseradish being a root that will keep good for a considerable length of time, they can afford to import large quantities of it at a time, and by so doing buy at a much cheaper rate than would remunerate English growers. S.



Mushroom Cave.

Mushroom Cave.—The accompanying view of one of the Parisian Mushroom Caves was drawn by M. De Bar during the present year. As we have before fully explained this curious and profitable mode of Mushroom culture, it is needless to say more on the subject. We, however, think that so striking a view by one of the best artists in black and white, and so well engraved, can hardly fail to interest our readers.

A Friend in Need.—Nobody can read the following extract without feeling the great need of knowing the habits of the insect creatures that haunt our gardens:—"One of the most troublesome of all garden pests in the way of raising Cabbages is the white Cabbage butterfly (Pieris Rapæ) and its caterpillars, or "green Cabbage worms" as sometimes called. This enemy of the Cabbage was imported from Europe to America nearly twenty years ago, and appeared near Montreal. Its principal enemy which has held it in check in Europe for hundreds of years was left behind, and it was unopposed in its ravages in this country for half-a-dozen years, during which it spread over New England and the Middle States, and has now reached Nevada in the west. After a time, however, its insect enemy, a minute fly (Pteromalus puparum), found its way over the ocean and commenced its attacks on its old enemy in the New World. The female fly deposits her eggs in the body of the caterpillar just under the skin, sometimes to the number of twenty, which hatch there and feed upon the fat of the caterpillar. These grubs continue to feed upon the caterpillars until they cause their death, which is before they become transformed into butterflies."

THE FRUIT GARDEN.

SUMMER-PRUNING GOOSEBERRIES.

"J. M. D." (see p. 542, Vol. XI.,) asks for the opinion of Gooseberry growers as to the merits of summer-pruning; and in giving a short outline of the system of pruning and culture practised here, I by no means wish to imply that as good results may not be obtained by other means, but simply that the produce is so satisfactory that no change is desirable. We have at present an unusually heavy crop, and, although the fruit has been thinned several times for tarts and bottling in a green state, what is left increases in weight so rapidly that the majority of the outer branches rest on the ground when not supported by temporary forked stakes or other supports. We have a new plantation, made only eighteen months ago, prepared in the following manner:—The ground was deeply trenched in the previous autumn; a quantity of old hotbed manure was worked into the bottom of the trenches, and in February last year, a number of healthy young bushes that had been closely headed down the previous year were planted in rows running north and south, 6 ft. apart each way, and as soon as they commenced to grow a good mulching of old spent tan and leaf-mould was spread over the roots, and a row of Strawberry plants, from which to procure pot runners was planted half-way between each row. Although the summer was hot and dry, the bushes grew amazingly, and each produced a few fruits; they were all headed back, and the branches were thinned out as soon as the buds began to burst, and now every piece of wood is literally lined with fruit, averaging from 3 to 4 quarts per tree. There is therefore no necessity for keeping old worn-out, sucker-producing bushes, for fear of being without fruit for years. I may add that all our bushes are on single stems, and they are never summer pruned, because the weight of crop keeps them from requiring it, and there are no suckers. Our spring pruning exactly coincides with "J. M. D.'s" practice, viz., to keep the centre of the bushes open and the branches thinly and evenly balanced; side shoots where not required for filling vacancies are cut in close, and if the trees be kept free from the attacks of birds the main shoots will be well furnished with fruit buds; although our bushes look thin after pruning, they are so full of fruit and foliage during the gathering season as to leave just sufficient room for getting amongst them. Of bushes left entirely unpruned we have examples in those that are to be destroyed the following year: but for bushes intended to stand several years there can be no question as to the propriety of judicious pruning. J. Groom.

Henham.

VARIETIES OF STRAWBERRIES.

This season is teaching us, somewhat roughly, the great value that ought to be placed upon the Strawberry as a fruit both for dessert and preserving, even under not too favourable circumstances. Whilst so many of our hardy fruits are thin as regards a crop, and in some cases absolutely barren, the Strawberry has done remarkably well—a great point in favour of this fruit. Perhaps of all hardy fruits the Strawberry and the Raspberry are the most certain to produce regular crops; neither are, however, keeping fruits. They must therefore be largely preserved, and for that purpose I certainly expect to find the Strawberry more largely grown in private gardens in future than it now is. A few weeks ago I alluded to some few varieties that I was growing here this season in larger quantity than usual. The selection comprises a dozen of the best kinds; the soil in which they grow is a stiff, clayey loam, and in it, in spite of drought and the soil baked to the hardness of brick, the plants have done remarkably well, and for yearlings have borne a good crop. Strawberries, like other fruits and many vegetables, are apt to change character on diverse soils, but that a stiff loam is the very soil in which these plants succeed best, I am constrained to believe. I have found each variety displaying its true merits or demerits, as the case may be. Not only earliest but best of the earliest kinds is Vicomtesse Héricart de Thury, a variety of the old Keen's Seedling type, having that broad, robust foliage so peculiar to that section. It is a first early cropper, and bears medium-sized fruit of a rich deep colour in profusion. Next in order of ripening comes La Grosse Sucrée, a French kind, having broad foliage, robust growth, and an average cropper. The fruit, which is medium-sized, is pale red, pointed, and of brisk flavour, but it is only a second-rate variety. Sir J. Paxton possesses considerable excellence, and is much in favour for market purposes. Premier proved to be the best in the collection: at the blooming time it exhibits more flowers than any of the others, and its fruit is the finest; it is an early second early, and is evidently a superior variety; its foliage is broad, robust, and handsome; the fruit is large, broad, solid, richly coloured, and of a pleasant brisk flavour; it is a first-rate market variety. President is almost too well known to need description; it is a capital kind for forcing, and in some soils is a valuable outdoor variety, but with me it was not particularly good; it is, however, a useful sort, and finds a place in all good collections. Dr. Hogg is perhaps the very best, and also the earliest of all the British Queen section; its fruit is large, generally well coloured, but at times apt to show a green point; this, however, detracts more from its personal appearance than from its value, as it is a luscious variety and a good cropper. Empress Eugènie has narrow foliage, but a strong, robust habit, and it is a heavy cropper; its fruit is large, somewhat pointed, rich in colour, and excellent in flavour; it is a valuable variety as a general cropper. Lucas is a particularly fine, robust, third early variety with a broad, umbrageous foliage that serves so well to protect the flowers from frost and the fruit from bright sunshine; it is an abundant cropper, the fruit being rather long and pointed, richly coloured, and good in flavour. James Veitch has foliage like that of the British Queen; its fruit is moderately large, and of good colour, but not first-rate in flavour; some growers have, however, written favourably of this kind. The Rev. W. F. Radclyffe is another variety of the British Queen type, but rather later; it is a good cropper, and the fruit is large and delicious in flavour; with many growers this is an exceedingly popular kind. Amateur belongs to the Pine family, and has peculiar foliage that renders it more distinct; it is a robust grower, and a heavy cropper; its fruit is somewhat sharp in taste, but it is one of the most useful kinds to cultivate for preserving purposes. Last of all is that most excellent and popular variety, the Frogmore Late Pine; this, in soil that suits it, produces most delicious fruit of the true Pine flavour late in the season; it is a robust variety, and one which should be grown in all gardens where late Strawberries are in request. If I could grow only six kinds, I should select Héricart de Thury, Sir Joseph Paxton, Premier, Dr. Hogg, Lucas, and Frogmore Late Pine; and for three varieties only, Héricart de Thury, Premier, and Lucas. A. D.

Bedfont.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Bees and Fruits.—A correspondent of the "Société Centrale d'Apiculture et d'Insectologie" in France denies the accusation that bees injure fruits. He states, and from our experience correctly, that the bee does not attack sound fruit; that it only sucks injured fruit, or such as has been punctured by the sparrow or earwig, or that the rain has caused to split open.

Screens for Fruit Trees.—Mr. P. Barry stated, at the horticultural meeting at Rochester, that winds often have a drying effect, and often injure the blossom-buds or blossoms. He had known fruit to succeed in the city and fail in the country. Mr. Moody had known Peaches killed on the windward side of trees and escape on the other side. Mr. Adams, of Michigan, said that screens as wind-breaks were the best protection for the tops, and mulching for the roots. Mr. Moody said that wind-breaks also prevented the snow blowing off, and thus saved the trees from exposure.

Peach Trees Killed by Paraffin.—My Peach trees were well formed and healthy, and bore crops equal to any in the county. Scale having appeared on them, I was strongly recommended to brush them over with paraffin oil, which I did on December 21. It not only destroyed the scale, but the trees also. There were no signs of harm done until the fruit was set, when gradually branch after branch showed signs of decay, and now they are more like firewood than growing trees. I also know others in this neighbourhood who have suffered through using paraffin, and would therefore, like "R. W.," recommend your readers to consider before using it on trees or Peas. I have also tried an experiment on a plant of Prickly Comfrey, which it destroyed in two days.—S. Laird, *Dunninald Castle, by Montrose, N.B.*, in "Gardener's Chronicle."

Frost and Low Ground.—It appears from the "California Horticultural," that the planters of Almonds at Santa Rosa are avoiding the valleys and planting on hills. No failure of the Almonds is recorded when growing on the higher grounds, but the crop is sometimes lost lower down.

WRIGHTS ENDLESS FLAME-IMPACT BOILER.

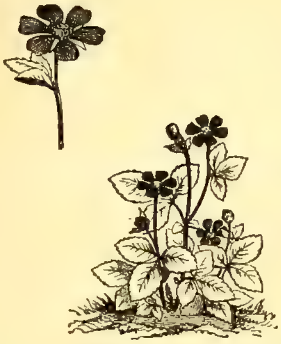
THIS boiler, which is constructed on a somewhat novel principle, has lately attracted a good deal of attention. I had an opportunity of seeing it at work at two different places during the last month, viz., at the Grange near Chester, and at Clovenfords vineyard, where Mr. Thomson intends to replace all the old boilers with it, feeling confident, as he told me, that it would effect a great saving in fuel—a very serious item of the expenditure at Clovenfords, where none of the numerous long ranges of Vineries are under 200 ft. in length, while they are nearly all span-roofed and 24 ft. wide and nearly as high, and consequently expose a vast area of radiating surface to the air, fully taxing the dozen or more long rows of 4-in. piping in each house. The merits of Wright's boiler, scientific and otherwise, are fully set forth in the advertisements, and it is not my intention to say much about them here. What gardeners and others want to know most in such cases is what the boiler can do, and on this point I shall only record what I saw. It is necessary to explain first, however, that the boiler is constructed in sections which are cast separately in one piece, and afterwards put together by india-rubber joints at the corners in what appears to be an excellent and secure manner. Thus more power can be added to the boiler when necessary by simply putting on additional sections, and the whole process is very simple. Unlike the saddle boiler, or other sectional boilers, the flame does not travel horizontally but vertically, and without any doubt at all in Wright's boiler is secured that direct action of the fire upon the boiler surfaces which, as the late Mr. Robert Thompson observes in his "Gardener's Assistant," is the great point that should be aimed at in the construction of hot-water boilers. In short, Mr. Wright boils the kettle from the bottom and trusts as little as possible to side or auxiliary surfaces. The flame from the furnace first hits the bottom section along its whole length, then splits, hits the side sections, meets again, and again splits and meets, and so on till the draught escapes into the chimney by the hole in the centre of the top section. Here, however, recent experience has suggested an improvement which is, we believe, to be adopted in future. The top of the boiler may be compared to a table with a hole in the centre of it; this hole is the flue-way, and, being in the centre, it was found to control the direction of the draught to some extent. To prevent this, and make the flame travel equally over all the surfaces, this central hole has been done away with, and instead four holes, one at each corner of the table, has been substituted, which is found to produce the necessary divergence, thereby enveloping the whole of the sections in flame when the fire is going well. Other and recent improvements, which are introduced for the first time at Clovenfords, consist in a contrivance for warming the air before it passes into the furnace, either through the top or bottom doors. As regards the circulation of the water in most boilers, as is well known, the water is left pretty much to find its own way, and consequently there is often a good deal of churning after the lighting of the fire before a regular circulation is established, but in Wright's boiler this cannot take place, for owing to the way the boiler is cast and put together, the water is compelled to flow in the channels provided for it, which is over the entire surfaces of the boiler from base to summit, and in the direction of the draught. And now as to the way the boiler does its work. I had intimated to Mr. Thomson that I desired to do the stoking myself, or at least to superintend it, and he had obligingly complied with my wish, for I found the boiler and pipes quite cold on arrival, and the fire ready for lighting. The boiler—the first of several that will be required to heat the whole of the premises at Clovenfords—is not much bigger than a good-sized tea-chest, if the depth of the furnace be excluded, and it is intended to heat 2600 ft. of 4-in. piping, or two long houses, each 270 ft. long, one of which is just finished, and contains 1300 ft. This amount of piping the boiler heated up to a tolerably high degree in two hours and a half, the water all being cold to begin with, and at a distance of 300 ft. from the boiler the pipes were just as hot as they were near the furnace. I had no means of testing the temperature of the water in the pipes, but the heat was just such as the hand could easily bear—a heat which gardeners do not care to exceed in their hothouses if they can help it, and to effect this but a very small quantity of coal was consumed. In addition to the few spadefuls used to start it, the fire was mended twice, a few shovelfuls being added each time, and by five o'clock the fire had burnt quite out, having been lit a little after twelve o'clock. I am particular in stating these facts, for they furnish data for those who are accustomed to judge in such matters. My own opinion was that it was the quickest example of heating by hot water I had ever seen, and I left with a very favourable impression of the boiler's merits. I witnessed similar results with the same boiler at The Grange, near Chester, only the boiler there, which was 4 ft. by 3 ft., and 2 ft. wide over all, including furnace room, was much in excess of its work. It had at the time of my visit 1547 ft. of piping to heat, and all of it throughout the entire range was so hot that the hand could not bear it; the temperature of the water could not be under 190° and at the time about 100 ft. of the piping was exposed to the open air and the rain. At the first trial, Mr. Edge (the gardener) informed me he had heated the above amount of piping up to 180° in 2¼ hours with cinders from the gasworks, the pipes having been just filled with water from the pump. Mr. Edge, like Mr. Thomson, expressed a very favourable opinion of the boiler, laying particular stress on the saving of fuel which it effected and its quick action. A feature of the piping arrangements at the Grange gardens is that the top of the boiler is above the level of the pipes 6 in., the flow-pipe dropping down with an elbow as soon as it enters the hothouses; yet, and as indicating the force with which the water is driven through the boiler, this descent in the piping does not appear to impede the circulation in the least. During the cold weather, the fire was made up every night at nine o'clock, and left till seven o'clock next morning without any reduction of temperature in the houses. J. S. W.

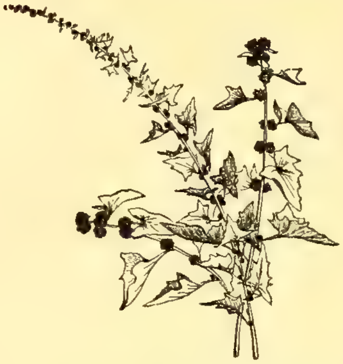
MOUNT VERNON.

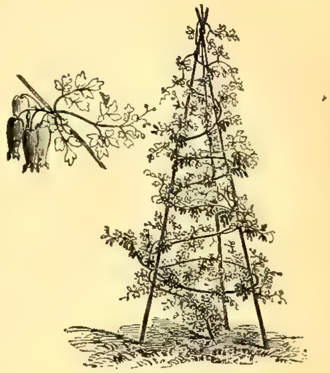
I WENT down the Potomac to see the old home of George Washington and his garden and trees. The Potomac hereabouts is a wide and beautiful river, its banks frequently wooded to the edge and rising in varied folds till they present a well-wooded line against the sky. Over it occasionally tosses a little boat on its way to Washington laden with Water Melons, the oarsman having just space to work between the piles of large fruit. Here and there nets are seen from which the sturgeons that plough about the muddy banks like so many great river pigs are taken almost as easily as so many sheep when once in the net. Mount Vernon is interesting even now, showing the first president's love for trees, gardens, and country life, and a sunk fence and other objects rarely seen in America show that he designed it after old-country models. Many trees of his planting are still here, and among them a greater number of the true Service tree than I have seen in England. The Box edgings in the old kitchen and flower garden have grown into large shrubs. Specimens of the Allspice tree (Calycanthus floridus) presented by Jefferson to Washington, huge Paper Mulberries, and a good many interesting trees are here. The old gardens are being saved from the neglect into which they had fallen; the orchard is to be replanted, and means will be taken to preserve the old place in as interesting and uninjured a condition as possible. From the little lawn in front of the old house the most beautiful scenes at Mount Vernon are enjoyed. Three openings through the woods that fringe the little lawn show the wide expanse of the Potomac, and in consequence of the configuration of the ground and river at this spot, the effect is as if one were looking on a broad and noble lake with large wooded islands. I have rarely seen a more lovely site for a garden; with trifling expense and a little judicious clearing and opening up of more views here and there, it could be made a very charming spot. H.

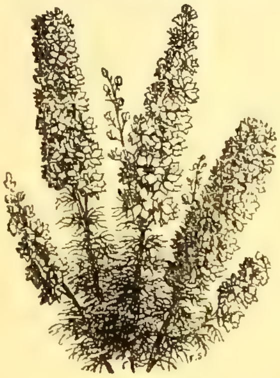
Cats and Small Birds.—The note of "E. C." on this subject merits attention; my experience has been similar as to the unceasing destruction of small birds by cats. One marauder, however, who tried to destroy a nest of tits in the pedestal of a large vase, got into trouble thereby. Not being able to reach the nest through the drainage hole of the vase into the pedestal below, it placed itself on the pedestal to watch the birds, but in doing so managed to overturn the vase and get caught beneath it, the young birds remaining safe in the pedestal. —O.

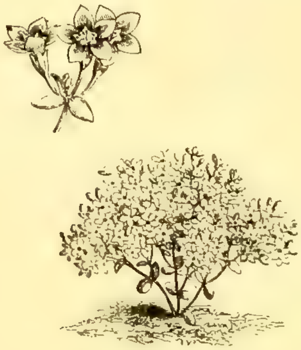
Flowering of the Sweet Potato.—The "New York Tribune" gives the statement of a Florida correspondent that the Sweet Potato blooms in that southern region, the flowers resembling those of the Morning Glory, to which, as is well known, the plant is nearly allied. They are pink and pale lilac in colour, and remain open only in the morning.

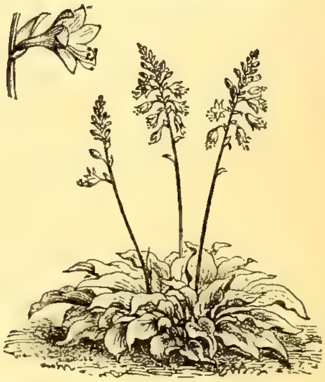

Dwarf Crimson Bramble (Rubus arcticus).

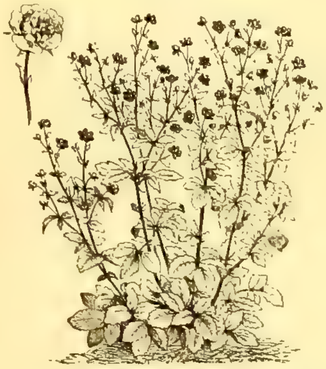

Strawberry Blite (Blitum capitatum)

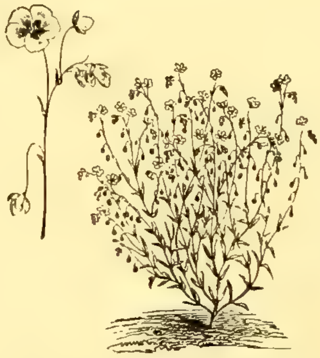

Adlumia cirrhosa.

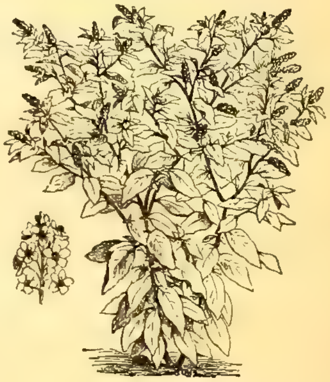

Rocket Larkspur
(Delphinium Ajacis fl.-pl.).

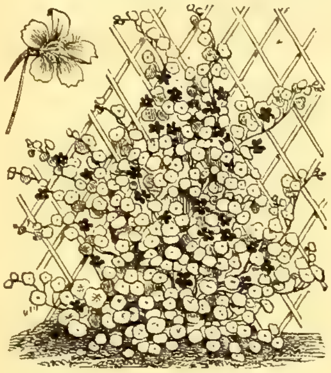

Gentian-like Grammanthes
(G. gentianoides).

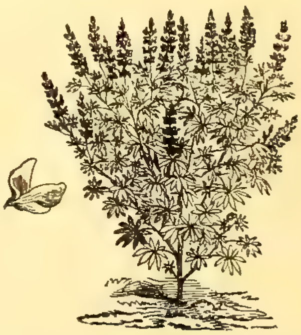

Lance-leaved Day Lily
(Hemerocallis lancifolia).

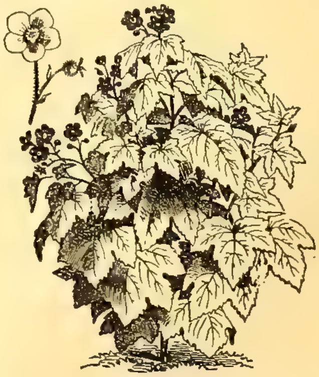

Double Cinquefoil
(Potentilla atro-sanguinea var. hybrida).


Spotted Sun-rose (Helianthemum guttatum).


Virginian Poke (Phytolacca decandra).


Large Indian Cress (Tropæolum majus).


Variously-coloured Lupine (Lupinus mutabilis).


Sweet-scented Bramble (Rubus odoratus).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

HARDY FLOWERS IN LONDON GARDENS.

Lilies of the candidum, Thunbergianum, and Martagon sections now rank amongst the most attractive occupants of our gardens. Delphiniums, too, are more beautiful at present than they have been all the season, and now that so many improved kinds, all of which are hardy, have been raised by different cultivators, the effect of groups of them planted in small isolated beds on the lawn or in front of shrubbery borders is better than can be obtained by even the most showy bedding plants. The white Gladiolus Colvilli, now very attractive, is being brought in a cut state to the London markets, and the purple-crimson G. byzantinus is also finely in flower. Hemerocallis fulva and H. Thunbergi are likewise very showy. The double Dropwort (Spiræa Filipendula fl.-pl.) is flowering remarkably well this year; it is frequently used as edgings to borders, but that is a position in which its real worth can by no means be appreciated. Foxgloves, which are just now at their best, are shown off to good advantage when dotted here and there among ornamental trees and shrubs. When planted in formal masses—beautiful as are some of the seedling kinds now in cultivation—they lose much of their effect. The scarlet Invincible Sweet Pea, when properly used, is very attractive, and affords abundance of flowers for cutting purposes. Irises of the Xiphion and Kæmpferi sections are still finely in flower, as are also Potentillas of various shades of colour. Different kinds of Yucca are throwing up flower-spikes, and the noblest of them all viz., Y. gloriosa, is in many places in full flower. Of Œnotheras, all of which are showy plants, one of the best for shrubbery work is Œ. Youngi, which grows about 2 ft. high. and bears great quantities of rich golden-yellow blossoms. The Bell-flowers (Campanula grandis and pyramidalis) are very attractive. The white Water Lily, too, is now flowering freely, and affords abundance of blossoms for use in large vases, in which, associated with Club Mosses, they have a cool and striking appearance. Ornithogalum pyramidale is very pretty just now, as is also the crimson-purple Triteleia Murrayana. Ixias and Sparaxis, planted in warm soil, are very showy, and the Pæonias still yield abundance of large gorgeous blossoms. Calochorti in variety may still be met with in good condition, and some of the kinds are peculiarly interesting as well as attractive. Hardy annuals of many kinds are beginning to flower, and, where skilfully arranged, add greatly to the beauty of gardens in which they are grown. S.

Butterfly Schizanthus (papilionaceus).

Double-flowered Meadow Sweet (Spiræa Ulmaria fl.-pl.)

Cut-leaved Meadow Sweet (Spiræa lobata).

SELF-FERTILIZATION AND CROSS-FERTILIZATION OF FLOWERS.

By T. MEEHAN.

At our last meeting I inquired whether insects are any material aid to plants as regards fertilization. After another year of observation I desire to answer my own question in the negative. Insects sometimes fertilize flowers and cross-fertilize them, but I believe these cases are less frequent than they are supposed to be, and that when they do occur, they have no bearing on the general welfare of the race. In other words, such fertilization is of no material aid to plants in the progress of the species. I may repeat the argument of those who differ from me. All plants with brilliant colours, with fragrance, or with honeyed secretions, have these attractions for the purpose of enticing insects, which unconsciously bring pollen at the same time, and thus cross-fertilize the flower. The proof of this is thought to be chiefly in the fact that many plants do not perfect their stamens and pistils at the same time, are placed in relative positions which make it seem difficult or even impossible that they should have any influence on each other, or in some other way present apparent obstacles to sexual union. From this it has been assumed, and not from any actual experiment of which I am aware, that plants abhor close breeding. That plants abhor close breeding is an idea borrowed from a supposed experience in the higher animals; but the comparison is not fair. In the higher animals the idea of sex is essential to the perpetuity of existence, but it is not so in plants. They reproduce themselves by bulbs, tubers, suckers, offsets, buds, and in the lowest organisms by simple cell division. Propagation, as an idea, is entirely independent of sex in plants. True, many of our forest trees have none of these accessories, even the skilful horticulturist can scarcely graft some of them, and then there are annuals which depends wholly on seeds—a product of the sexes—for perpetual existence; but there is not one that I know of that a horticulturist would say could not be reproduced indefinitely without the aid of seeds. The Red Dutch Currant is an individual plant which has been reproduced by cuttings from long anterior to modern history, and I believe the Canada Thistle, Couch Grass, Horseradish, and numerous other plants could be continued for countless ages by their running roots alone. Now this is a closer kind of breeding than anything that could come through the operation of separate sexes, and with which no analogy can be drawn from any experience in the higher forms of animal life. We can see that seeds in plants favour the distribution of species, and enable them to maintain existence for a longer period than mere plants could. Sex in plants may be a factor in the evolution of form; but those who have kept pace with botanical knowledge, and are familiar with what is known as bud variation, will not lay much stress on the absolute necessity of sex to this end in vegetable nature. I believe I am safe in saying that there is nothing whatever known to prove that there is any physiological benefit to plant races by the establishment of the sexes. Some have thought that the varieties of Apples as sexual products wear out in time; but even this is being argued on both sides by the most distinguished horticulturists;

and I may say that I have seen at the recent Centennial Exhibition, as fine Golden Pippin Apples (the kind used to illustrate the theory), as ever Mr. T. A. Knight thought were only seen in his younger days. We must then lay aside all considerations of the benefits of cross-breeding from analogy or inference, even though we should find that all plants discarded their own pollen. There may be some other reasons quite independent of any sexual consideration; and it is because I believe there are other reasons in diœcious, monœcious, and other cases, that I adhere to my statement.

We may note, in the first place, that insects visit some anemophilous plants as freely as they do others. They, for instance, abound on the male flowers of the Willow, especially Salix caprea, which have abundant honeyed secretions; but they avoid the female plants. If honeyed secretions be for the purpose of enticing insects for cross-fertilizing purposes, how is the object attained here? Later in the season we see the same thing in Rhus. R. glabra and R. copallina are in effect diœcious. The male flowers have a honeyed secretion peculiarly attractive to innumerable insects. A panicle of these flowers is a wonderful entomological cabinet. I know of nothing like their visits here in the whole floral world. I have six plants of Rhus copallina within twelve paces of each other. Five are males and one is a female. I have never seen one insect on the female plant, neither does it seed, neither wind nor insect serves it. Here are two species with colour and honeyed secretions on which insects abound inordinately; and yet the insects aid fertilization in no degree whatever. I ask you whether I may not say most decisively that whatever may be the purposes of colour, fragrance, or honeyed secretions, they are not for the purpose of attracting insects in the interests of cross-fertilization. Then there is Yucca, about which so much has been made. In my grounds, Yucca filamentosa abounds. It opens its flowers about the 25th of June. In 1875 a plant of Yucca angustifolia blossomed on the 5th of June. Though closely watched, I found no Pronubas about them. They produced no seed. The Y. filamentosa had numbers, and seed abounded. About the 5th of June this year, the Y. angustifolia again opened its flowers. On the 12th I noticed the Pronuba to abound, and I hoped for seed. There were from one to five in each flower. On the 19th, I noticed that the flowers had almost all fallen fruitless. I then placed some pollen on four of the flowers, each pollen from its own flower, and these four capsules which I exhibit are the results. They are the only seeds the plant produced. Even when fertilized at all by insects, I am sure the fertilization is from the pollen of the same flower. My experiment shows its own pollen is acceptable to it. It is true it is difficult to understand why the plant seems unable to fertilize its own self without extraneous aid; but it is clear that it is not from any abhorrence of its own pollen, or an especial desire for insect aid, especially the aid of an insect whose chief mission seems to be to prey on the fertilized seed!

The chief arguments for the necessity for insect fertilization are drawn from structure and not from fact. For instance, we are told that Iris, Campanula, Dandelion, Ox-eyed Daisy, the Garden Pea, Lobelia, Clover, and many others are so arranged that they cannot fertilize themselves without insect aid. I have enclosed flowers of all these named in fine gauze bags, and they produced seeds just as well as those exposed. I was somewhat surprised at the two first, Iris virginica and Campanula, producing seeds under these circumstances, as they are common illustrations of the necessity of insect fertilization. In short, in all the cases I have tested in this way, seeds were produced as well under the gauze as without, except in one instance—Baptisia australis. In most Papilionaceous plants that I examined, in spite of the suggestions of my friends, I thought the arrangements favoured self-fertilization—not only by the position of the organs, but from the fact that the moment anything touched the flower so as to liberate the pistil or stamens, a mass of pollen floated around like a little cloud; a dispersion of pollen, which, by the way, in view of prevailing theories, the class of flowers with "fragrance, colour, or honeyed secretions," ought not to make. Genista scoparia will give an excellent illustration of this. But in Baptisia I did not notice this little cloud; and it did seem in the actual act of collecting honey, the humble bee's pollen-covered abdomen pressed itself closely down on the stigma. I covered a spike of a dozen unopened flowers with a gauze bag, and had only one seed-vessel, though in the exposed spikes nearly every one perfected. This fact may go for what it is worth; for be it remembered, I am far from denying that flowers are sometimes fertilized by the aid of insects. It is the extent of these facts, and the theories to be deduced from them, that I have to deal. Independently of trials by gauze bags, I have experimented with single flowers of some species. I take plants of which there are no others in the vicinity, and pick off all but a solitary flower, not permitting another to open until the other has faded, and if they seed, it must be only by their own pollen. I was led to try this from noticing a few first flowers of Œnothera serrata (which open about noon and die in a few hours) seed when I was almost sure no insects had visited them. In watching for this purpose Talinum teretifolium, I found that it opened always a few minutes before one p.m., began closing at three, and by half-past three had wholly closed. No insect visited them in that time, but every flower seeded, as did subsequent experiments with single flowers. An ally, the common Purslane, remains expanded only from eight to nine a.m., and is, I think, an undoubted self-fertilizer, and yet on what theory of the advantages of cross-fertilization could a plant make better headway through the world?

It is, of course, well known that some flowers are opening and closing at almost all hours of the day and night, many remaining open but a very short time. Can this varying and limited time have anything to do with insect fertilization? Would not fertilization by insect aid be more certain if at least a whole day were given for the chance? In my district the little florets of the Chicory are all fertilized before eight o'clock, and by nine have faded away. This species is an excellent one for noting how self-fertilization is effected in Composite plants, as the pistils are blue, and the pure white pollen is easily seen. Soon after daylight, the corolla lengthens. After a little while it rests, but the stamens and pistil go on. Then the stamens cease to grow, but the pistil continues to lengthen, carrying an immense quantity of pollen with it. Here is the difficulty which those who differ from my experience. The pistil has to cleave, and only on the interior of the clefts seem to be the stigmatic surface; the pollen then must, it is said, rest of necessity only on the exterior, where it cannot operate; but if any one will get up early and spend a couple of hours in watching the development of the flower, driving away an occasional sand-wasp that would like to gather the pollen, he will find there is not a cloven pistil that has not some pollen on the interior stigmatic surfaces. Of what avail are "must be's" against positive facts like these? But if he watch closely, he will see that this pollen falls into the chasm made by the opening stigmas. In the language of my friends, it is a "beautiful arrangement" for ensuring self-fertilization. If, further, we allow the sand-wasps to work at pollen gathering, we find that while clearing the pistils of pollen, they push quantities into the clefts, and are, therefore, agents in self-fertilization instead of the reverse. I have observed the same in Dandelion and the Ox-eyed Daisy (Chrysanthemum leucanthemum), as well as I am sure that thousands flower and perfect seeds that no insect visits. There seems to be something yet inexplicable as to how some flowers become fertilized. In Cirsium Pitcheri and many others of that section, what in others is a bifid stigma, is nearly entire, the stigmatic surfaces being almost, or perhaps in some cases wholly, united together. C. Pitcheri has very long pistils; the honey-bee seems very fond of the flowers; it works between the pistils. I have never detected a grain of pollen on the almost entire apex, though the sides are covered as in other composites; but it seeds abundantly.

I think the peculiar closings of flowers are as much designs for effecting self-fertilization as for anything else. It does effect it in Ranunculus, Claytonia, most likely in the Iris enclosed in the gauze bag, and perhaps many plants with flowers that close and twist up in fading. In Ranunculus, on the first day's opening of the flower, the outer of the numerous rows of pistils throw their pollen on the glazed petals; these close at night, and the pollen is dropped in over the hollow in which are the mass of perfect pistils. I refer to R. bulbosus. In Claytonia virginica the same thing occurs with the early flowers, so far as drawing the stamens up to the pistils is concerned. In the later flowers the anthers recurve more, and in the closing at night are drawn under the pistils, and hence we find seed here only from the earliest flowers. These illustrations are not uncommon. Even in wind fertilizing flowers, the times of opening and closing of certain parts of the flowers may be worth a study. I find Luzula campestris—the wood form—bursts it anthers about nine o'clock a.m.; by ten, the pollen is committed to the atmosphere. As its own pistil has dried up by this time, having expanded two days before, it cannot fertilize its own pistil. There is no evidence that it would not be just as well if it could. This precision and uniformity as to time shows that there are other considerations involved in the acts connected with fertilization besides those usually suspected.

This brings us to the question of dichogamy as an agent in this question. Much stress is laid on the fact that in many flowers the pistil is mature before or after the stamens, and this is interpreted as an especial arrangement for cross-fertilization. I pointed out last year that this difference in time varied with the season in many species, but the difference is striking in some closely allied species. Barbarea præcox and B. vulgaris, two Cruciferous plants, are so nearly related that the difference can scarcely be defined. The former, however, has its pistil of about equal length with the stamens, all included in the petals. The stigma certainly receives its own pollen simultaneously with the expansion of the petals; but in B. vulgaris the pistil protrudes beyond the closed petals, and in perfect condition to be fertilized by extraneous pollen before it can be served by its own: both species make their way equally well through the world. I think no better illustration could be offered of the fact that a dichogamous plant has no advantage in the struggle for life. This fact may, however, be illustrated in various ways. Supposing the Iris could not self-fertilize, its next of kin (Sisyrinchium) is certainly a self-fertilizer, and who will say that it has not made its way proudly? Iris virginica is comparatively local, but any student can get a specimen of Sisyrinchium bermudianum on a few hours' notice. You can find flowers which seem to forbid self-fertilization, it is true, but let us not close our eyes to those so constructed as to render insect aid impossible. There are some Scrophulariaceous plants which have the pistil arranged above the stamens so as to seem placed there, in order that a visiting insect may rub its pollen-covered back against the pistil on entering; but many Pentstemons (P. grandiflorus, P. Cobæa) incline the pistil downwards, impossible for any such insect-fertilization, yet every flower perfects seeds. Browallia elata has a hairy cap over the stamens, and an insect would only aid in self-fertilization; but when the Browallia is not visited by insects it yet seeds abundantly, and it might be argued because it has no fragrance; but there are some garden Verbenas which have fragrance as well as colour. No insect visits them on my grounds as far as I can find, but both kinds seed equally well. In fact, this idea that colour and fragrance are necessary to attract insects, and are given to plants for that purpose, does not accord with the fact that flowers with neither are thronged with insect patrons; but I have taken especial pains to note Rubus occidentalis, our native Black-cap Raspberry. It has not the faintest trace of odour. Its small, greenish-white petals are so inconspicuous that it might as well be apetalous; but nothing can exceed the fondness of the honey-bee for it. They abound in my vicinity, and from sunrise to far into the twilight of evening, the honey-bee crowds on them. They neglect every flower, even White Clover, for them as long as they last. Surely, there should be a necessity for insect-fertilization in cases where insects are so assiduous! I have had this point suggested to me. A cluster of flowers had a gauze bag thrown over them, and yet there was a perfect fruit to every blossom, as also had all the neglected Clover flowers as well.

As to Clover flowers, I will refer you to what I said of them last year. Since then, so great is the faith in the necessity for insect-fertilization, that humble bees have been sent from England to New Zealand to help the Clover along. Since last season I have discovered that our humble bees do not enter the mouth of the Red Clover, care nothing for the elaborate arrangements for cross-fertilization, but slit the tube and get at the honey from the outside! And yet the Clover seeds abundantly. So far as I could see, every flower in the field where I saw the bees behaving so outrageously, bore its seed. Many flowers are served in this way, and unless one looks closely he may be deceived. In the Persian Lilac, if we follow the course of our friends of the insect-fertilization school, we see the stamens arranged above the pistil, and as the pollen bursts simultaneously with the opening of the corolla, it ought to fall on the pistil, and the entrance of an insect would only aid its self-fertilization; but with us it never yields a solitary seed, and we may be asked to behold the results of self-pollenization! But we see exactly the same arrangement in the common Lilac, and that seeds abundantly In both cases the humble bee slits the tube, and the honey-bee follows in the slits made by its stronger friend, or else makes slits for itself—a point I was unable positively to determine. Indeed one of the points I wish to insist on most strongly is, that the facts in the question have been but imperfectly observed, and then erroneously construed, and of this I will offer but one more illustration. It relates to dimorphous flowers, those with the pistils long in some flowers, and short in others, as in Epigæa, Mitchella, Houstonia, and others. When we look at the allies of these plants, we notice that this behaviour is exceptional. It may be assumed that they have wandered from a condition when the separate sexual organs were nearer to a perfectly hermaphrodite condition, and it is assumed that this wandering is in order to derive some benefit from cross-fertilization through insect agency. I have endeavoured to test this assumption in Houstonia cœrulea. I selected a number of plants of both forms, and marked them when in flower. In some clusters aggregating about fifty flowers of the short-styled plants, and which, I have no doubt, were self-fertilized, forty-two perfected seed. Of fifty with long styles, and which would necessarily have more difficulty of availing themselves of their own pollen, only five matured seed. Thus we see that the self-fertilizer has at least the advantage of numbers, and, in the battle for life or for any purpose, that is surely an advantage of no mean importance. I believe I have shown that the facts are not wholly as represented, and that the facts, even when they may exist as represented, do not produce results according to the deductions drawn from them.

Let me now show the danger of attempts to read the purposes of Nature from her direct acts. If we examine swamp vegetation, we find Magnolias, Willows, White Cedars, Red Maples, Cypresses, and numerous others growing therein. We at once conclude that they grow there because these trees prefer the wet to the drier land; but a wider acquaintance with trees will show that all of them do better when, as we often find them, growing in drier places. A suspicion then arises that there is something wrong with our reasoning, and we find at last that Nature has a deeper purpose than merely an individual regard for these trees. Their seeds will only grow in wet soil, and of necessity, and not for individual benefit, have these trees to remain there. Again, I think there is nothing more certain than that effects will continue long after the causes which produced them have ceased to exist; so that actions which you see may be associated with degradation instead of evolution, may be the last flickering of a dying light, and not an Aurora indicating the birth of a new day. In the present question, our reason will tell us that the phenomena we see may bear this interpretation as well as those given to them by our friends. In Europe, for instance, the common Strawberry is almost universally hermaphrodite; but in this country the tendency to diœcism is well known. We know also that those parts of the world in which diœcism prevails is not so favourable to the existence of the Strawberry as the other, and we may safely conclude that diœcism—a form of dimorphism—has no relation to any advantage to be derived through the sexes, but is an actual result of degrading conditions. Then, physiologically, what good can result? It is asserted by those who differ from me that probably most of the large Order of Composites are cross-fertilized; the flower in one head receiving the pollen of another flower in the same head, by the aid of insects. This they contend after an examination of the structure. After noting the behaviour of the parts, and in the absence of insects, I contend that they are self-fertilizers. But supposing they were all that is asked for them; compare one with an ordinary polypetalous flower—say Ranunculus—and where is the gain? The floral parts are all on the same common peduncle in both cases, and the stamens and pistils are more widely separated in a Ranunculus than in a Dandelion. Practically there is a wider separation of the sexes in the Ranunculus than in the Dandelion, granting even all or more than is asked for as cross-fertilization in Composites. Physiological disturbances that aid the vital principle in the pistils, and interfere with that of the stamens, of course weaken the vital power of the pollen. In such cases foreign pollen—pollen from flowers free from these disturbances, or where the disturbances favour the stamens instead of the pistils, would have more potency. It is therefore not surprising that some cases should occur proving foreign pollen better than their own pollen. It would be more surprising if there were none; for in every direction we find Nature with overflowing abundance, pushing beyond what we regard as the necessary mark. As the boy, who to jump across the stream first goes back, and when he lands on the other side goes farther than he wants; so does Nature in all things, or I have not read her story rightly. I can refer, in a brief paper like this, to but a few observations I have made, nor do I think it necessary. I will now submit these propositions:—1st. That cross-fertilization by insect agency does not exist to near the extent claimed for it. 2nd. Where it does exist there is no evidence that it is of any material benefit to the race—on the contrary. 3rd. Difficulties in self-fertilization result from physiological disturbances that have no relation to the general welfare of plants as species.—"Proceedings of the American Academy of Sciences."

SOCIETIES AND EXHIBITIONS.

THE NATIONAL ROSE SHOW.

THIS, considered simply as a Rose show, gave satisfaction to good judges, considering the lateness of the season and the fact that the northern growers were at a disadvantage from this cause; but from the point of view of the public, and all who look at the Rose from anything more than the exhibitor's standpoint, we regret to say that the arrangements were far from what one would like to see those of a great National Rose show. In the first place, St. James's Hall is a most unsuitable place in which to hold any kind of flower show, particularly during hot weather. If any building were desirable, it should have been a more commodious one. The fact is, Londoners accustomed to the charms of Grass and trees and fresh air in connection with our flower shows, do not care to face St. James's Hall in July, even for Roses. Thus it happened that a most extensive and beautiful display of Roses, forming undoubtedly the most charming sight in London on the 4th of July, was left mainly to the contemplation of those who staged them. We never expected any better result from holding it in St. James's Hall. There may be good reasons why Rosarians keep their show away from the great societies, but not that it should be held under such disagreeable conditions as on Wednesday last. There are the Floral Hall and the Albert Hall, where much better arrangements could be made both for the convenience of the public and for the effect of the flowers. At St. James's Hall, in the centre the light was too strong, at the sides too obscure. At one end, under the wide gallery, a fine display of Roses was almost hidden away in dismal obscurity. In judging, the boxes had in many cases to be carried from where they were placed into a better light to enable the judges to see them. We do not hesitate to speak plainly in the matter, seeing the importance of the interests concerned. A National Rose Society should meet with sympathy from all who care for our gardens, and it ought on such an occasion to make a display of the most admired of all flowers which would be an attraction to all London. As it was arranged, there was positively not standing room for one-fourth the number of persons who attend a good London flower show. This trouble was, however, got over by the public not coming. If Rosarians merely seek to please themselves and their friends the recent show may be all very well, but a National Rose Show should be arranged on a very different plan.

As regards the exhibitions in the nurserymen's class for seventy-two single trusses, there were six competitors, all of whom produced blooms much better than might have been expected considering the season, which, on the whole, has been anything but favourable to the proper development of the Rose. The best stands came from Messrs. G. Paul & Sons, The Old Nurseries, Cheshunt, in whose collection we remarked magnificent examples of Antoine Ducher, the brilliant crimson maroon-centred Jean Liabaud, the rich rose magenta-petalled Star of Waltham, very large and highly-coloured flowers of La France, the satiny-white Madame Lacharme and Maréchal Niel set off to advantage amid brilliant scarlets such as Louis Van Houtte, and others; the same collection also contained Baroness Rothschild and exquisitely-formed François Michelon. Mr. Cant, Colchester, who produced blooms scarcely inferior to those just named, had good examples of Captain Christy, Annie Disbach, Exposition de Brie, Duke of Wellington, and Senateur Vaisse, still one of the best of Roses for exhibition purposes. With these were associated Antoine Mouton, the lovely Souvenir d'Elise, and the brilliant Sir Garnet Wolseley, each bloom being surrounded by abundance of foliage and unexpanded buds.

In the class for forty-eight varieties, three trusses each, there were five exhibitors, all of whom had fine blooms tastefully arranged both as regards colour and position. The best collection came from Messrs. George Paul & Sons; it contained magnificent examples of Madame Jamain, supported by highly-coloured blooms of François Michelon, the dark crimson Xavier Olibo, and the beautiful lively flesh-coloured Madame Eugéne Verdier. Associated with these were also blooms of the deep magenta-coloured Comtesse d'Oxford, Louis Van Houtte, and the dark-flowered La Rosière. The next best group came from Mr. Charles Turner, who showed amongst others good blooms of Madame La Baronne de Rothschild, Ferdinand de Lesseps, Comte de Nauteuil, the dark maroon-crimson Lord Macaulay, and grand examples of François Michelon, a Rose which throughout the show held a prominent position in nearly every collection. The next best group, which came from Mr. Cant, contained fine examples of Souvenir d'un Ami, the cream-coloured, Tea-scented kind called Rubens, the bright rosy Sir Garnet Wolseley, and François Michelon. Amongst other collections in this class were beautiful blooms of La Baronne de Hausmann, Madame Nachury, and Louis Van Houtte. In the class for forty-eight single trusses, seven exhibitors staged blooms, of which the best came from Messrs. Cranston & Co.; amongst them were magnificent examples of Marguerite de St. Amand, Duke of Edinburgh, the dark crimson Baron de Boustetten, Madame Chas. Wood, and the rosy-salmon Madame Theresa Levet. Associated with these were also well-formed blooms of Madame Lacharme, Madame Vidot, Niphetos, and the rich salmon-pink-coloured Mdlle. Marie Cointet.

In the class for twenty-four varieties of Hybrid Perpetuals, three trusses of each, there were six exhibitors, the most successful one again being Messrs. Cranston & Co., Hereford, who had effectively-arranged blooms of Baroness Rothschild, Lord Macaulay, the deep rosy Annie Laxton Xavier Olibo, and the beautiful satiny-white pink-fleshed Marquise de Mortemarte. Some good Roses also came from Messrs. Paul & Son, who showed Duke of Edinburgh, Marquise de Castellane, and Maurice Bernardin, in unusually good condition. In the class for twenty-four trusses there were nine exhibitors, and taken as a whole, the blooms individually were perhaps better than those in the larger classes. The best came from Messrs. Curtis, Sanford, & Co., Devon Rose Nursery, Torquay; amongst these were the dark velvety-crimson Prince Camille de Rohan, the pink Princess Beatrice, fine examples of Paul Neron, and a beautiful creamy-white kind.

In the class for twelve Tea-scented or Noisette Roses, distinct trusses, Mr. Cant showed a fine stand, in which were good blooms of Madame Bravy, Vicomtesse de Cazes, and finely-shaped examples of Souvenir d'Elise, and La Boule d'Or. Messrs. Mitchell & Son, Pitldown, was a close second with magnificent blooms of the creamy-white, pink-edged Duc de Magenta, Souvenir d'un Ami, and excellent examples of Marie Ducher. The premier prize in the amateurs classes was awarded to Mr. Jowitt, The Old Weir, near Hereford, who furnished splendid blossoms of Captain Christy, Madame Hippolyte Jamain, the dark velvety crimson Prince Camille de Rohan, and the largest blossom of François Michelon we have seen this season. Next to these came a stand of beautiful blooms from Mr. R. N. G. Baker, Heavitree, near Exeter; amongst them were Captain Christy, Marie Baumann, Madame La Baronne de Rothschild, and Prince Camille de Rohan, all in fine condition.

In the amateurs' class for thirty-six single trusses, the exhibits were so numerous that they occupied one whole side of a long table. The best blooms in this class came from Mr. Baker, who had exquisite examples of La France, Duke of Wellington, Edward Morren, Dr. André, the beautiful pink Rose called Miss Hassard, and pure white, satiny blooms of Marquise de Mortemarte. The next best, from Mr. J. Brown, Reigate, contained good blooms of similar kinds.

In the class for twenty-four Hybrid Perpetuals, Mr. Atkinson, Brentwood, showed excellent blooms of Edward Morren, Duke of Edinburgh, and Marie Baumann. Associated with these were also the salmon-tinted Baroness Rothschild, Dr. André, and Countess of Oxford. Mr. Baker also showed in this class good examples of Marguerite de St. Amand, Victor Verdier, and Baroness Rothschild. In other classes provided for amateurs, the best examples came from Mr. Baker, Mr. J. Ridout, Woodhatch Lodge, Reigate, Mr. T. Lakin, Chipping Norton, and Mr. Smallbones, Chatteris. Amongst these we noted remarkably fine blooms of Ferdinand de Lessèps, Elegant, Xavier Olibo, Sir Garnet Wolseley, Duc de Rohan, very large blooms of Maréchal Niel, Louis Van Houtte, and unusually good trusses of Duke of Edinburgh. In the amateurs' class for twelve distinct trusses, there were staged some remarkably fine blooms; indeed in these collections might have been seen blooms superior to those in any of the other classes. Of Tea-scented and Noisette Roses, some fine blooms came from Mr. J. Brown, Reigate, who had amongst others Anna Olivier, Souvenir d'Elisé, Niphetos, alba rosea, and Souvenir de Paul Neron. Mr. Chard, Salisbury, contributed good examples of devoniensis, the flesh-tinted Catherine Mermet, and finely-coloured blooms of Cloth of Gold.

In the class for twelve trusses of English-raised Roses, the best came from Messrs. Paul & Sons, Cheshunt, who had examples of Reynolds Hole, Marchioness of Exeter, Duke of Connaught, Annie Laxton, and Duke of Edinburgh, all in excellent condition. The same firm showed John Bright as the best new seedling Rose, and it obtained, as it well deserved, the first prize in that class. Messrs. Paul & Sons also exhibited several other kinds of new Roses, amongst which we noticed Robert Marnock, a finely-formed bloom with dark maroon petals edged with scarlet. Mr. Turner furnished a kind named Penelope Mayo, which, when well established, will probably be a first-class Rose.

In the class for twelve blooms of La France, Mr. Baker showed a stand of magnificent blooms, and in competition for the prize offered by Messrs. Fisher Holmes & Co., Sheffield, for twelve blooms of Fisher Holmes, Mr. Baker was first. In the class for the best stand of François Michelon, Messrs. Curtis, Sanford, & Co., showed splendid examples of that fine Rose, a coloured illustration of which was given in The Garden (see p. 356, Vol. XI.). The best stand of Marie Baumann came from Mr. Cant, who had even, well-formed, and richly-coloured examples of that fine variety, and Messrs. Paul & Sons had lovely blooms of Alfred Colomb. Of Reynolds Hole, a kind also figured in The Garden (see p. 356, Vol. XI.), Messrs. Paul & Son, showed twelve charming blooms; and of Maréchal Niel the exhibitions were numerous and in every case excellent; the best of them came from Mr. Turner. Mr. William Corp, High Street, Oxford showed a collection of Tea Rose-buds gathered from plants budded on seedling Briers; though small, this collection afforded an excellent opportunity for judging which were the best kinds to grow for market purposes, as, of course, for bouquet making, small buds are at all times preferable to fully-expanded blossoms.

In the evening there was a dinner, well attended by Rosarians—though probably less so than it would have been had it not have been for the counter-attraction of the Gardeners' Royal Benevolent Institution dinner taking place on the same evening. The Rev. Canon Hole, who was in the chair, in proposing the health of the Queen said:—Rosarians, I will not ask you to remember the Queen of Bourbons, nor the Queen of Denmark, nor Frederic the Second, nor Leopold the First, nor Roi des Belges, nor Empereur de Maroc, nor the Sultan of Zanzibar, nor Rivers's George the Fourth; but my toast shall be La Reine, Paul's Victoria, and everybody's Victoria — our Perpetual Rose! Esto perpetua! May she live for ever, and you and I be there to see. And let us add to our Souvenir de la Reine d'Angleterre, the rest of the Royal Family. The Duke of Edinburgh, the Duke of Connaught, and Prince Arthur have been a good deal tried by the heat; but Princess Mary of Cambridge and Princess Beatrice have bloomed in royal beauty. But where, my loyal Rosarians, where are our Prince and Princess? The Prince of Wales, sent out by Laxton (alas, my brother, misereatur Deus!), is not a success, and we have as yet no Rose of Denmark. All honour to the man who shall supply the vacancies with Roses raised on English ground! Gentlemen, I give you the Queen and the rest of the Royal Family.

The Chairman then said:—We do not propose to prolong our floralia this evening—some would return to the Roses, and others to home, sweet home—and I will therefore express at once another sentiment, which must be uppermost in all our hearts—Success to the National Rose Society. I may not dwell upon the privileges which such an institution brings to us—the communion of kindred spirits, the brotherly friendships, the extended and more careful culture of the most beautiful of all flowers, and therefore the greater and purer happiness of men (for where have we such fresh, innocent, and enduring happiness as in our gardens?). I may not dwell on these things, because it was my good fortune to suggest, some twenty years ago, a society of this kind, and with the help of earnest brothers, to establish the first National Rose Show, and I might seem, therefore, to be imitating the conceit of John Hopper—I beg your pardon—I mean John Horner, who "put in his thumb and pulled out a Plum, and said what a good boy am I." And again, if I say too much about the present revival and development, if I express my feelings of deep gratitude to my old and dear friend, D'Ombrain, for his successful efforts, I shall seem, perhaps, to flatter, and some may say, that, though they don't dislike anchovy toast with coffee, they don't like buttered toast with wine. Well, let the National Rose Show speak for the National Rose Society. There has been a good deal written about the "language of flowers," and I certainly seem to hear these Roses speak, and what they say is this: Whatever difficulties may oppose you at first—however coldly jealousy and apathy shall say you nay—even though your coffers may not overflow upon your opening day—though your space be insufficient—with such an exhibition as this, you must, you shall, succeed. Just let me add one word more on the title of our Society. If it is to be really National, we must have two annual exhibitions, for this simple reason, that the Roses of the nation do not bloom simultaneously. We should have a Rose Show in London towards the end of June, and, some ten days later, a Rose Show in the midland and northern districts. I should have so little apprehension as to the success of the latter, that I would take upon myself, because I rely on the sure support of the brethren, the hazard of a first experiment. I am sure that in Nottingham, Liverpool, Manchester, Scarborough, Hull, York, and many other places, an exhibition of Roses, under the auspices of the National Rose Society, would be appreciated and supported by them, who believe that

> Old England's emblem is the Rose,
> There is no other flower,
> With half the graces that adorn
> This beauty of the bower.

ALEXANDRA PALACE ROSE SHOW,

June 30.

This Show may fairly be pronounced to have been a success both as regards quality and quantity of exhibits and the numbers of visitors. In all the classes, of which there were twenty-five—there were numerous entries, and the exhibits in all were so good that in many cases extra prizes had to be awarded. Cut Roses, of which the Show was chiefly composed, were arranged in boxes which occupied five long tables, between which was allowed plenty of room for visitors to pass and repass. The premier prize was awarded to Messrs. Paul & Sons, Cheshunt, for seventy-two distinct trusses; among them were specially noticeable fine forms of the amaranth-crimson La Rosiere, very large blooms of François Michelon, the beautiful semi-double velvety-black Xavier Obilo, Charles Lefebvre, and Wilson Saunders; these were effectively relieved by the bright golden blossoms of Maréchal Niel, finely-shaped blooms of Madame Lacharme, and the white rose-tinted flowers of Duchesse de Valombrosa. In the same class Mr. Cant, Colchester, exhibited capital examples of La France, the dark crimson Louis Van Houtte, and Comtesse d'Oxford. In the class for forty-eight trusses of three blooms each Messrs. Paul and Mr. Turner, Slough, had effective groups, conspicuous in which were Monsieur Boncenne, Exposition de Brie, Baron de Bonstetten, and Etienne Levet, and associated with these were fine examples of Madame Lacharme Maréchal Niel, and Duke of Wellington. From Mr. Keynes, Salisbury, came Louis Van Houtte, the blush-centred, white-petalled Captain Christy, and Alfred Colomb in capital condition. Tea-scented and Noisette Roses were well represented by Mr. Turner and Mr. Keynes, the most prominent in both collections being Ferdinand de Lesseps, Madame Lacharme, alba rosea, Countess of Oxford, Dean of Windsor, and François Michelon. The best collection in the amateur's class came from Mr. R. N. Baker, Heavitree, near Exeter, who had excellent blooms of Duke of Edinburgh, Sultan of Zanzibar, François Michelon, the dark crimson Louis Van Houtte, the bright rose-coloured Louisa Wood, and the velvety crimson Prince Camille de Rohan. Mr. Thomas Jowitt was second with good examples of Horace Vernet, La France, and an excellent bloom of amœna. The best Tea-scented and Noisette kinds came from Mr. Pemberton, who had good examples of Lyonnaise and Madame Bravy; and Mr. Davis, Aynhoe, Banbury, had fine blooms of Marie Van Houtte, President, Souvenir d'un Ami, and Perle des Jardins. In the open classes for twelve Roses of 1875, 1876, or 1877, Mr. Turner was awarded the first prize for excellent blooms of Miss Hassard (one of the best pink Roses in cultivation for exhibition purposes), Rev. J. B. M. Camm (a large, globular-shaped, rosy-pink kind, exquisitely scented), Alex. McKenzie, and Monseigneur Fournier, a kind with very large flowers of a reddish-rose colour, and finely imbricated in form. Messrs. Paul & Sons showed in the same class magnificent blooms of Duchesse de Valombrosa and Marchioness of Exeter, a kind raised by Mr. Laxton, and admirably adapted for exhibition. In the class of English-raised Roses in commerce, Messrs. Paul & Sons and Mr. Turner were the chief competitors, both producing fine blooms of Duke of Edinburgh, Emily Laxton, Reynolds Hole, Marquis of Salisbury, Sir Garnet Wolseley, and Oxonian. In the class of twelve blooms of specified kinds, that best of all white Roses, Madame Lacharme, was shown in unusually good condition by Mr. Cant and Mr. Turner. The best blooms of Princess Beatrice came from Mr. Cant and Messrs. George Paul & Sons; and Maréchal Niel, large and fine, was shown by Mr. Turner and Mr. Davis. La France was furnished in good condition by Messrs. Paul and Messrs. Cranston; and the best box of Marie Baumann came from Mr. Cant. Mr. William Paul, Waltham Cross, showed a miscellaneous collection of cut Roses beautifully fresh and fragrant. The best vase of cut Roses came from Mr. Turner, who, in addition to having good blooms, had them tastefully arranged. Palms, Ferns, and other fine-foliaged plants were arranged in such a way throughout the show as to set the Roses off to advantage, a point of much importance as regards effect in the case of such exhibitions as that in question.

ROYAL HORTICULTURAL SOCIETY'S SHOW.

July 3.

This meeting, though perhaps the smallest that has taken place this year at South Kensington, was not without interest, Mr. Cannell showing some good Verbenas, and Mr. Turner cut blooms of Pelargoniums; there was also a number of new plants.

First-class Certificates.—These were awarded to the following new and rare plants:—

Aerides crassifolium (Veitch).—A dwarf-habited plant, bearing drooping spikes, furnished with large flowers, having rich purple-tipped petals, and ivory white throat.

Alocasia Thibautiana (Veitch).—A vigorous-habited kind, with large, heart-shaped, deep green leaves, having, very prominent, fleshy greenish white ribs, and white cobweb-like veins.

Cypripedium albo-purpureum (Veitch).—A twin-flowered variety—a cross between C. Schlimi and C. Dominyi. The leaves of this plant, which are of a lively green colour, assume a gracefully drooping habit, and measure about 18 in. in length. The flowers, which are of a dullish-brown crimson, have a beautifully-spotted throat, and long twisted rosy-pink tails on each side, rendering it one of the most distinct and useful of Lady's Slippers.

Rhododendron, Countess of Derby (Veitch).—A compact-habited greenhouse shrub, with glossy green leaves and an abundance of long tubular-shaped flowers of a bright pink colour suffused with orange-scarlet, and having conspicuous bright scarlet, black-tipped anthers.

Rose, Marchioness of Exeter (George Paul & Sons).—A large, well-formed, conical-shaped flower, very double, and of a clear rose colour, some of the petals being flushed with cherry-rose. One of the best English-raised Roses, of which we have already several fine kinds.

Rose, May Quennell (William Paul).—A fine Hybrid Perpetual Rose, with well-formed, stiff petals of a deep rose colour suffused with bright magenta.

Iris Kæmpferi alba grandissima (Barr & Sugden).—A large broad-petalled flower of good substance, pure white, with bright greenish-yellow throat, and well worth a place in every collection.

Iris Kæmpferi, Mrs. Barr (Barr & Sugden).—A kind with petals having a lilac ground, conspicuously marked with bluish-purple veins.

Iris Kæmpferi, Robert Parker (Barr & Sugden).—Flowers round-petalled and of good form, the centre being rich dark purple, and the petals, are of a lilac colour strikingly marked with deep purple and wine-coloured stripes.

Eschscholtzia crocea, Mandarin (Carter & Co.).—A floriferous kind to which allusion is made in "Notes of the Week" (see p. 1).

Eschscholtzia crocea fl. pl. (Carter & Co)—A semi-double-variety having a rich orange-colour, and probably the beginning of a race of double-flowered Eschscholtzias.

Lilium elegans, Mawi (Maw).—A variety resembling the type but with larger flowers, orange in colour profusely spotted with dark purplish crimson.

Lilium croceum, Chaixi (Maw).—A roundish-petalled flower of a rich orange colour, and having short, stiff, reddish-brown anthers.

Miscellaneous Subjects.—From Messrs. Veitch & Sons came a collection of new plants, consisting of Cypripedium, Masdevallias, Vandas, two Rhododendrons, and other interesting genera. Mr. W. Paul, Waltham Cross, showed a box of Roses containing several kinds of a meritorious character, and Messrs. Paul & Sons showed three new Roses, viz., Marchioness of Exeter, Duke of Teck, a kind with brilliant crimson well-formed flowers, the outer petals of which are of a dark velvety maroon, and John Bright, a kind with remarkably bright crimson-coloured flowers, and ample green foliage. Mr. H. J. Elwes contributed an interesting group of bulbous plants, consisting of varieties of Calochortus, a white variety of Gladiolus Colvilli, Lilium parvum, a spike of Hyacinthus candicans bearing drooping bell-shaped blossoms, and a fine variety of Lilium auratum called Wittei. In the same collection were also some fine varieties of Alstrœmeria, Lilium Washingtonianum purpureum, and several choice kinds of Irises and Ixias. Lilium Thunbergianum came from Mr. Maw, Benthall Hall, Broseley, who also sent L. Chaixi, and L. canadense; to this group a label of commendation was awarded. Mr. G. F. Wilson, Weybridge, showed several varieties of Lilies, including Lilium Krameri, the small bright scarlet-flowered L. callosum, and L. columbianum; Eurya latifolia variegata was also shown in flower by Mr. Wilson. From Messrs. Barr & Sugden came a collection of cut blooms of Lilies, comprising all the best kinds now to be found in flower. From the same firm also came a collection of new varieties of Iris Kæmpferi, to which allusion is made elsewhere. Amongst Mr. Turner's Pelargoniums we noted a pure white-flowered kind with purple anthers, admirably adapted for bouquet making. A bright-flowered kind named Challenger is also worthy of notice; its lower petals are bright crimson, the upper ones being blotched with dark velvet. Amongst others, too, the semi-double, Regal kinds were conspicuous. From the Society's gardens at Chiswick came a collection of cut blooms of Antirrhinums and Sweet Williams, which, being intermixed with Ferns, constituted an interesting feature of the show. From the same source also came a well-grown panful of Mimulus moschatus Harrisoni. A collection of Sweet Peas and other hardy annuals came from Messrs. Carter & Co. A Tree Carnation, named Lady Avenel, from Mr. Turner was admired on account of its large pure white, waxy-looking, sweet-scented blooms, which are produced in great profusion. Messrs. F. & A. Smith, Dulwich, sent plants of show Pelargoniums and double-flowered Petunias. From Mr. Parker, Tooting, came branches of Fremontia californica, bearing numerous large yellow flowers, cut from a bush grown for many years in the Tooting Nurseries, where it has had no protection even during the severest winters. A vase of cut flowers of Andromeda cassinefolia came from Mr. Ollerhead, gardener to Sir H. Peek, Bart., and the same exhibitor also showed two well-grown Queen Pine Apples. A collection of Strawberries from the Society's gardens at Chiswick consisted of most of the varieties in cultivation; amongst them, the best as regards appearance were Lucas, Royalty, Vicomtesse Héricart de Thury, and Keen's Seedling. Mr. Wm. Bull showed a brace of Cucumbers named Excelsior, and Messrs. Veitch & Son exhibited a new Pea named Criterion, evidently a heavy cropper, and otherwise an excellent variety.

NOTES AND QUESTIONS—VARIOUS.

Durability of the Catalpa.—Prof. Burrill, of the Illinois Industrial University, furnishes the "Prairie Farmer" with a number of statements to prove the great durability of the Catalpa. One of these would draw hard on the credulity of some persons—a tree lying on the ground about a century was found to be sound, and was sawn up into good boards.

Weeds.—The best time to kill a weed is as soon as it has germinated, before you can see it. When it is just ready to break through the ground, the least disturbance of the soil disarranges its connections and it dies in the sun; but if it grows until it makes roots it is not so easy to disturb it, it has a hold upon the soil and it sometimes lives on in spite of one.—T.

The Georgia Pine Lands.—Across the State of Georgia, from east to west, extends a broad belt of primitive Pine forest. Its width is about 75 miles and the surface of the country is almost a dead level. No underbrush grows, and no other tree besides the tall, spindling, long-leaved Pine. The ground is carpeted with a green growth of weeds, and so open is the forest that were it not for the fallen trunks of dead trees, one might ride through it at a gallop. Streams are rare. There is a melancholy monotony in the endless vistas of tall, brown columns roofed with green, that becomes oppressive after hours of travel through this sombre region.—Correspondent of "Tribune." [This, we presume, refers to Pinus palustris, rarely seen in cultivation in this country.]

Tall Border Flowers.—Can you furnish me with the names of a few hardy plants of this description which would look well in front of shrubberies, or at the back of mixed borders?—Delta.—Aconitum Stœrkianum, A. variegatum; Delphinium, tall varieties; Baptisia exaltata; Lathyrus latifolius, L. latifolius albus, L. grandiflorus; Œnothera Lamarckiana; Epilobium angustifolium, Lythrum Salicaria rosea; Echinops exaltatus, E. ruthenicus; Galega officinalis, Aster Novæ-Angliæ, A. Novi-Belgii, A. elegans, A. ericoides, and many others; Achillea Eupatorium; Campanula pyramidalis; Asclepias Cornuti; Verbascum Chaixii; Phlox, taller kinds; Tritoma Uvaria grandiflora; Dracocephalum speciosum; Lilium in variety; Polygonum cuspidatum; Arundo Donax, Pampas Grass; Anchusa italica; Arundo conspicua; Eupatorium ageratoides; E, purpureum; Helianthus orgyalis, H. multiflorus flore pleno; Hollyhocks; Dahlias; Pyrethrum uliginosum; Crambe cordifolia; Phytolacca decandra; Lupinus polyphyllus; and Macleaya cordata.]

Richmond Park.—The following letter has been sent by Mr. De Morgan to his Royal Highness the Duke of Cambridge, Ranger of Richmond Park:—"Commons Protection League, June 29.—Sir,—My attention has been called to your illegal enclosures of portions of Richmond Park, and to various illegal practices you have resorted to since you were appointed Ranger. I have to inform you that I have been appointed by request and public meeting to assert the right of the people to enjoy Richmond Park, and I have concluded to put in force every legal means to maintain that right. As I do not wish to do anything unlawful, I will thank your Royal Highness to cause to be forwarded to me copies of any Act of Parliament or other authority under which you have made the said enclosures. I have sent a copy of this letter to Her Majesty's First Commissioner of Works.—Your obedient servant, John de Morgan." The following reply has since been received from the Duke's private secretary:—"July 2.—Sir,—I am directed by his Royal Highness the Ranger of Richmond Park to acknowledge the receipt of your letter, which has been referred to Her Majesty's First Commissioner of Works and Public Buildings, under whose authority all enclosures and plantations are placed, and by whose orders all works in the park are executed."—"Times."

No. 295.] SATURDAY, JULY 14, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE VALLEY OF FLOWERS.

ABOUT half an hour's walk north-west of the Hotel des Alpes at Mürren, lies a broad valley known as the Blumenthal, and well it deserves its name. It is about three-quarters of a mile broad and about a mile and a half long, surrounded on three sides by walls of green grass sloping steeply up rocky cliffs which rise at the upper end to a height of some 2000 ft., and are part of the first slopes of the Schilthorn, which is hidden by them. Up this valley I lately took a botanical ramble, and though I returned drenched to the skin, I thought myself amply repaid by the rich harvest of plants which I brought home. My way lay through the picturesque châlets of Mürren, and up a steep path of stone steps between fields of uncut hay, which now look like brilliant flower-beds with half-a-dozen different sorts of Campanulas, Pink Polygonum, Orchis, Phyteumas, Ranunculuses of different kinds, and here and there a grey rock peeping out encrusted with Saxifrage, Sempervivum, the exquisite dark blue Veronica saxatilis, and every crack full of Ferns—Polypodium Dryopteris, Cystopteris fragilis, and Asplenium septentrionale being among the commonest. After passing the last châlets, where later in the afternoon the whole village congregate to meet their goats as they return from pasture, we found ourselves fairly in the Blumenthal, the Almendhubel rising green and fir-crowned to our right, the precipitous rocks of the Schiltgrat to our left, and down the middle of the valley from the snows of the farthest wall rushed the beautiful Mürrenbach between high rocks which broke it into scores of tiny waterfalls. The hay was white with Ranunculus, and blue with Forget-me-nots; but my object was thoroughly to search a mass of high rocks at the upper end of the valley, lying just below some large patches of unmelted snow, and for these I made with as little delay as possible. The first thing that attracted attention was a bed of Anemone narcissiflora just coming into full bloom, the unopened buds pink like a bunch of Crab blossom, and beside them in every sheltered damp hole between the rocks grew Thalictrum aquilegiæfolium, with heads of pinkish-purple flowers. The short damp turf was studded with Primula farinosa, here in full bloom, while below at Mürren nothing but seed-vessels are to be found. The large blue Gentian, the smaller G. bavarica with its almost sky-blue blossoms, Pinguicula alpina, P. vulgaris, and the grand golden flowers of Geum montanum, each as large as a penny-piece, were to be found here. On the rocks themselves grew sheets of the exquisite Dryas octopetala, Saxifraga Aizoon in full flower, Primula viscosa with a few blooms still left on it, and last but not least, P. Auricula, though with nothing but seed-vessels to be seen. This last formed the special object of my search, and I had vowed that if it were to be found in flower I would find it; so after half-filling my baskets with roots from the rocks, I pressed on towards the great sheets of snow which lay above me. As I neared them, I found myriads of delicate white Crocuses springing up through the burnt brown Grass mingled with the small purple parasols of Soldanella alpina, and around each heap of stones a fringe of a little and richly-scented Oxlip. At last, on the top of a heap of stones, I espied the treasure for which I was looking—a splendid plant of Primula Auricula in full bloom. Around grew thousands of the splendid white Anemone alpina and A. sulphurea; at this height their petals were all a purplish-grey outside, and the plants were somewhat dwarfer than below, where they were rapidly passing out of flower, and were either pure white or sulphur-coloured. They grow here in such immense quantities that I am surprised they are not more commonly found in English gardens, for certainly it would be hard to find two more beautiful plants, or plants more useful for the garden or for indoor decoration, as they last many days in water. And now having gone so far, I determined to go still farther, and to try and reach a col on the wall of the valley between the Schwarzhorn and the Schiltgrat. A smooth green slope, broken here and there by piles of stone or a solitary rock, led up to this col, and on I went. Never was green slope more cruelly deceptive. I am afraid to say at what angle it lay; I only know that with nailed boots and strong alpenstock I could hardly keep my feet as I toiled sideways up it, for in reality it was a mass of the finest slate detritus covered with vegetation, which the rain had made as slippery as so much ice. Once on it return was impossible, so with great difficulty I managed to get to a large boulder, which gave one a firm foothold, and to my great delight I found it covered with pink cushions, which proved to be Silene acaulis in full bloom. While resting here and waiting for my companion, who was laden with the plant-basket, I heard a roar and a rattle, and to my horror saw a couple of big boulders bounding down from the upper cliffs. They passed within half-a-dozen yards of where she stood, and plunging on buried themselves in the snow below us. This was an unpleasant warning, so we hurried forwards, and at last reached a small path, which led us in a few yards to the summit of the col. Here a magnificent view greeted us, but as it was getting late, and the rain-clouds were rolling up from the valley, we hardly stayed to look, but followed the path along a knife edge of shaly rock to the highest point of the Schiltgrat, 6970 ft. above the sea, and 1643 ft. above Mürren. Here we stayed for a moment to get breath, and to get some roots of Anemone sulphurea, which was here in great beauty; large blue Gentian, Primula farinosa, a small Ranunculus, Hedysarum obscurum, Botrychium Lunaria, and to gather some Alpen-rose (Rhododendron ferrugineum) which clothed the precipitous cliffs to our left into the Blumenthal. We were now on a high and dry green Alp, and finding a good path we set off for home, reaching the hotel in forty-five minutes, wet through but triumphant. ROSE G. KINGSLEY.

Murren.

BUYING "COMMON" PLANTS FOR KEW.

SIR JOSEPH HOOKER suggests in his recently-issued report on Kew, that it would be well to purchase from suburban nurserymen the commoner kinds of plants for the embellishment of a certain house at Kew. Considering the appliances, the cost, and the able staff at Kew, this will scarcely be thought a desirable innovation. There is certainly glass enough at Kew to provide for all its wants. But we believe with the director that it would be well to "devote attention to the rarer sorts alone." It would be greatly to the gain of our horticulture if the director would courageously throw over the practice of growing tender plants that may be seen on every hawker's barrow and in every garden we pass by. The aim of the garden should be to lift us out of our meanness and poverty of garden embellishment. We have, for example, always held that one of the things that ought to be done well at Kew would be the hundreds of fine hardy plants now worth a place in the best parts of our gardens. Instead of healthy aim in that way, however, it for years past has merely tried to rival the big bedding-out places. We could well spare many "common" plants at Kew. But how much remains to be done in making uncommon ones known to us! We can allow for the many cares of such an establishment, but with bedding-out and "common" plants on one side and fine hardy plants and rare ones on the other—there should be no hesitation as to the right course.

SUMMER PRUNING FRUIT TREES.

IN nearly all districts fruit this year is thin, and there will probably be a tendency to produce too much wood, especially late in summer. This scarcity of fruit may perhaps in some cases beget an indifference about giving the trees the necessary attention, a course which would be most unwise, as it is only by close attention now that a crop next year can be secured. It is true we cannot control the seasons; nor is it possible in all cases to carry out our ideas in the matter of glass or other protectors, but the trees themselves at this season are, or should be, under control, and can be so arranged by thinning and training as to expose the future bearing wood to the full influence of air and sunshine, and the thorough maturation which such treatment ensures. In the case of trained trees, it is important to secure well-developed foliage and buds—the one cannot be had without the other—close to the base of the spurs, and this can only be obtained by keeping the young wood thin. If the shoots be allowed to unduly extend themselves before pruning begins, the bottom leaves will lack substance, and the buds will be weak and probably imperfectly ripened. At the same time, very close pruning or pinching is not desirable, for if the young shoots be cut in closer than four or five leaves, the back eyes may start into growth instead of forming fruit buds. Trees of a rather weakly habit, or that have in previous years borne heavy crops, should be allowed a little more freedom of growth, as, provided a gross habit be not contracted, and the young wood not crowded, the stimulus imparted by a greater breadth of foliage will infuse new life into any tree that lacks vigour, and enable it to go on again for a series of years in a fruitful condition. E. Hobday.

NOTES OF THE WEEK.

A Beautiful Shrub.—We once figured (see Vol. X., p. 58) a most beautiful Abelia (A. triflora) that forms large bushes in the Botanic Gardens at Glasnevin, and this week we are indebted to Dr. Moore, the director of the Gardens in question, for specimens of a more showy species, wreathed with large tubular flowers of a fine rose, viz., Abelia floribunda.

Desfontainea spinosa in Scotland.—At the Marquis of Tweeddale's fine old gardens at Yester, in Haddingtonshire, I noticed a noble plant of this in flower in the open air, though in a pot. It was about 4 ft. high and nearly as much through, and bore numerous flowers. It is set out in the open air in summer, and no doubt protected in winter in a cool house. In this way this brilliant plant is well worth growing where it does not thrive out-of-doors, as in Wales and the south of England and Ireland. I also noticed here a plant of the old Venus Victrix Fuchsia, now so seldom seen, and which is said to be the first white Fuchsia ever raised.—D. S.

Finely-flowered Orchids.—We have at present a plant of Odontoglossum Vexillarium roseum bearing on four strong spikes fifty-two expanded flowers. The sepals and petals are of a very dark pink colour, and the tip nearly blood-red, and measuring 3 in. across. It is one of the best varieties I have seen. We have also a fine specimen of Oncidium macranthum bearing 156 flowers; its longest spike is 12 ft. 3 in. Masdevallia chimæra is showing twelve spikes; and M. Harryana sanguinea is producing eighty-four flowers.—A. Falconer, *The Poplars, Leyton.*

Moss Roses in the Market.—Notwithstanding the unfavourable season which we have had, Moss Roses seem this year even more plentiful than usual in London, for at the corners of nearly every street may be seen huge baskets of them, whilst in Covent Garden and other markets early in the morning they may be seen by the cartload. They are made into "button-holes" and sold for 1d. each. There are white, red, and pink ones, but the latter are most abundant. Of all under crops in market gardens Moss Roses are the most profitable, and about Ealing, Kew, and Hammersmith many acres of land are devoted to them. They are grown chiefly under orchard trees, and therefore the young buds are protected in spring from late frosts by the overhanging boughs, which of course are not then sufficiently leafy to injure the Roses by their shade.—S.

Cypripedium spectabile.—A large mass of this Lady's-slipper may now be seen in Messrs. Rollisson's nursery at Tooting. It grows near a wall belonging to one of the plant-houses, where it is somewhat sheltered, and thus situated, it flowers freely. If a few weeks previous to the blooms expanding the plants be taken up and potted, they make excellent subjects for conservatory, greenhouse, or room decoration. As a pot plant this Lady's-slipper is, however, a little too leafy in proportion to the flowers which it produces; but if it were possible to hybridize this with such kinds as C. insigne or C. barbatum, this objection might probably be obviated, and a good hardy, free-flowering greenhouse variety be obtained.—C. S.

Carlisle International Horticultural Exhibition.—The Executive Committee have nearly completed their arrangements for this great show, which is to take place on September 6, 7, and 8, next. The fruits, plants, flowers, and vegetables, will be exhibited in large marquees, and the accommodation will be on a more extensive and convenient scale than that provided for the Dundee International Show last year. There will be a large central pavilion 100 ft. in diameter, from which will diverge marquees from 40 ft. to 50 ft. wide and 1000 ft. in length. The exhibition will take place on The Sauceries, a beautiful meadow close to Carlisle, extending from the ancient walls of the castle to the River Eden, which will be the northern boundary of the show ground. The principal entrance is a few yards from the roadway in Dacre Street. The interior arrangements and general management of the show have been entrusted to Mr. William Thomson, of Clovenfords, who will be assisted by an Executive Committee experienced in all matters relating to gardening. In the meadows outside the marquees will be an exhibition of horticultural buildings and other appliances connected therewith.

Agave Miradorensis.—A large plant of this at Sudbury House, Hammersmith, is throwing up a flower-spike which has grown 10 ft. in three weeks. It belongs to the American Aloe class.—J. C.

Imported Old Men Cacti (Pilocereus senilis).—Of a quantity of these which have been imported, some only 2 in. high have hairs 3 in. and 4 in. in length, giving them quite as old a look as if they were 100 years of age.—J. Croucher, 75, *South Row, Kensal New Town.*

Climbing Bessie Johnson Rose.—This is the name given to a new Rose now in flower in Messrs. Paul & Sons' nurseries, Cheshunt. It has flowers resembling those of Bessie Johnson, but it is a climber, a great advantage, considering the few good free-blooming, light-coloured climbing Roses which we possess.—F.

Rose Beauty of Glazenwood.—We regret to see that the "Journal des Roses" reproduces the monstrous exaggeration which was figured in an English publication under the above name. We have seen specimens of the said Rose, and wonder by what imaginative process the drawing of the plate in question was obtained.

Ixora Colei.—Fine specimens of this white-flowered Ixora may now be seen in flower in several of the London nurseries. In habit it is compact and dwarf, and quite as floriferous as other kinds, single plants bearing in some instances from fifty to sixty clusters of flowers of snowy whiteness.—S.

Peaches from France.—These are arriving in the London markets in large quantities, and some of them are very large in size, resembling in form Grosse Mignonne, but very inferior to that kind in flavour. Royal George, from the same source may, however, be had in excellent condition, many fruits of it being very large and beautifully coloured.

Aërides odoratum in Covent Garden.—Fine spikes of this Orchid may have been seen for some time past in the florists' shops in Covent Garden. Such spikes are, of course, too large for use in ordinary floral decorations, but the individual, sweet-scented, white purple-tipped flowers, when stripped from the stalks and wired, are valuable in small bouquets, in which, associated with Rosebuds and scarlet Bouvardias, they have a charming appearance.

The New Zealand Flax in the South of Ireland.—Dr. Moore writes to us from Glasnevin:—"I have again had the rare treat of seeing, at Lismore, the Phormium in all its beauty, with thousands of wasps feeding on the nectar which fills the tubes of the perianth; it is truly magnificent. The stems rise from 10 ft. to 15 ft. The double purple Deutzia is also a fine plant, as it grows there, in the midst of Myrtles and other shrubs."

The Double Agapanthus.—This form of a well-known decorative plant will doubtless, when plentiful, be largely grown for furnishing cut blooms for market. For bouquets or button-holes, its double deep blue flowers are admirably adapted, and form a pleasing contrast to white Rosebuds, Jasmines, or Gardenias. Really good blue bouquet-flowers are generally scarce, the kind chiefly used for that purpose now being the Cornflower, to which the Agapanthus might be made to form a good succession. Flowering plants of it may now be seen in the Victoria Nurseries, Holloway.

Sweet Peas in Covent Garden.—Of these the pure white-flowered forms and the Scarlet Invincible are the kinds liked best on account of their decided colours. They are the produce of seeds sown in November, a time when many sow their first crops of culinary Peas. As soon as they are above ground they are earthed up and staked. As the weather gets warmer the plants grow apace, and in June they yield a good supply of bloom, which is kept regularly cut three times a week, and the better this is attended to the longer the plants continue to grow and yield blossoms. For later supplies seeds are sown in succession during the spring months, and in dry seasons they are given copious supplies of water.—S.

National Carnation and Picotee Exhibition.—This is to take place in the Westminster Aquarium on the 18th and 19th inst., when the number and value of the prizes offered will doubtless induce keen competition. The prizes are open to all exhibitors, whether they are subscribers to the Society or not. Notice of entry should be given to Mr. E. S. Dodwell, 11, Larkhall Terrace, Clapham Rise, not later than the 13th inst. Prizes offered for Roses by the Royal Aquarium Company will be competed for on the same occasion. Entries in the Rose classes must be sent to Mr. E. Bennett, at the Aquarium, not later than the 14th inst.

PROPAGATING CONIFERS.

Coniferous trees and shrubs are propagated by means of seeds, cuttings, and grafting, the latter process being reserved for those kinds which either do not strike readily from cuttings, or from which seeds are not easily procured. Grafting now, too, takes the place of layering, which was formerly extensively practised, but is now, owing to a better knowledge of grafting, but seldom resorted to. There are two methods by which seedling Conifers may be raised: they may be either sown in pans or boxes, and placed under glass, or they may be sown in the open air. In the case of rare kinds, or where but a limited quantity of seed is intended to be sown, the former is preferable, as, owing to the seeds being protected from accidents and variations of temperature and moisture, there is a greater certainty of the seed germinating properly. The pans or shallow boxes in which the seed is sown should be well drained. The soil used should be a mixture of loam and leaf-mould, with the addition of about one-third of sand. The pans or boxes should be filled about three-fourths full, the soil made firm, and then watered; this to be done the day previous to sowing, as it is necessary that the bulk of the soil should thoroughly settle into its place before the seed is sown. On this another layer of fine sandy soil must be put and firmly pressed down. On this the seed should be sown, making the surface firm, and giving a moderate watering. If they be placed where not exposed to drying air and sun, there will be no occasion for subsequent heavy waterings. The consolidation of the soil is an important point as regards this description of seed, at the same time it must not be rendered in any way hard, or impervious to the young rootlets. If, however, the compost be not of too tenacious a nature and have been carefully prepared, there will not be much to be feared upon this score. Especial care must be exercised not to over-water just as the seedlings are pushing through, as a little indiscretion in that respect at that period often proves disastrous. As soon as they are fairly up they should be placed where air has free admission, or whole panfuls of young plants will go off in a few days, if a free circulation of air be not kept up among them. If it be intended to plant them out in open ground a bed should be prepared for them, say 4 ft. in width, which will allow of their being easily watered and cleaned when necessary. In planting out it is extremely important that the young fibres do not in any way go dry. The contents of each pans should be carefully knocked out, and all the roots retained. The best way to plant them is to cut out a small trench several inches in depth, against the side of which each plant should be firmly but gently pressed, allowing the roots to extend downwards to their full length, covering them immediately with soil. In this way fresh roots will be made in a few days, which will at once strike deeply into the ground. The difference which these few precautions and extra care makes in the growth of the young plants is surprising, for although Conifers are as a rule hardy in character, yet if subjected to careless manipulation they do not fail to show the effects of it in the shape of stunted growth. If once they get into bad condition it is difficult to induce them to start freely again into growth. Water must be given them when required, and if cleanliness be observed a satisfactory growth will be the result. If sown in the open ground 4 ft. beds should be prepared, and the soil well pulverized, and according to its consistency it must be made more or less firm for the reception of the seed. The latter may either be sown broadcast or in drills, and the thickness of soil used in covering it will have to be regulated by the size of the seed. When sown it is as well to lay some boughs over the beds until the young plants begin to germinate, as they protect the seeds from birds and hot sun. Branches of the White Spruce answer well for this purpose, but failing them any evergreen will do. The ensuing season they may be pricked out in beds in the manner just mentioned.

Cuttings.

There are several ways of propagating Conifers by means of cuttings; one of the best is to take strong shoots in August with some 2 in. of ripened wood attached to them. These should be inserted firmly in 4-in. or 6-in. pots, in a light, sandy compost, and placed in frames situated, if possible, in a north aspect. Here the greatest amount of air and light possible must be admitted to them, only shutting up and shading lightly during the hottest part of the day. On fine, still nights the lights should be entirely removed, in order that they may enjoy to the full extent the refreshing dews which generally fall about that season. In September a mild hotbed should be made up either of tan or leaves and manure; if the latter be used, then it must be surfaced with about 1 ft. of tan or sawdust, in which the pots should be plunged. Thus treated, the cuttings, after being callused, speedily emit roots, and on no account must they be allowed to suffer from want of moisture. By the end of October they will be well rooted, when they may be removed to a cool house or frame, there to pass the winter; in spring they may be potted off or planted out. In the case of kinds which it is desirable to push into quick growth, or of which there is only a limited stock, great advantage will be gained by potting them off early in February, and plunging them in a gentle bottom-heat. This will induce the formation of an extra amount of rootlets, by means of which the plants will be benefited when placed in the open ground. The method just described can only be employed where there is plenty of strong plants from which to take cuttings; where the stock is limited, and it is desired to make the most of it, it will be necessary to proceed differently. The cuttings must be taken in a smaller state from the green wood, and put into pots or pans, which should be surfaced with 2 in. of silver sand. In autumn they will have to be placed in a close house, where they may enjoy a warm, equable temperature during the winter; if a little bottom-heat can be afforded them they will be all the better for it, and will have made good root by the spring, when they may be either potted off or planted out. There is another way by which many of the Coniferous tribe may be propagated with a fair amount of success, and which possess the merit of simplicity. Take strong shoots early in September, and put them firmly in sandy soil in a north border, or where they are effectually screened from direct sunshine and drying air in the early summer months. The cuttings should have quite 3 in. of the ripe wood inserted in the soil, and in dry weather should be kept well watered. In this way many of the Thujas, Cypresses, &c., will strike fairly well.

Grafting.

Grafting may be performed either early in spring or about the month of August. For this purpose two-year-old stocks are preferable, as it is desirable that the stock and scion should be as near of a size as possible. They should be established in 3-in. pots, and if it be intended to use them early in the spring they should be kept during the winter in cold frames. There are several methods of grafting Conifers, but ordinary side-grafting is in most cases the best. This operation consists in making a clean cut in the stem downwards about an inch in length, then at its termination making a transverse cut, thus removing a piece of the bark-wood clean away from the side of the stock. The scion should be cut off clean and square at the end, and a piece of the wood should be shaved off about equal in length to the cut on the stock. The butt-end of the scion should then be placed upon the notch cut in the stock, taking care that the bark on one side meets exactly the whole length of the cut. The great aim in this operation is so to cut the scion and stock that the former when fitted on nearly replaces the piece removed. The scion being thus fitted must be held firmly in its place by the thumb of the left hand and tied on with bast or wool so that it does not afterwards shift. When the scion is very small, or the stock much out of proportion to it, another method may be practised. This consists in simply making an incision obliquely in the stock, the scion being so cut that one side of it forms a sharp edge, in order that it may be easily inserted therein, the bark of the scion thus coming level with that of the stock. This is a neat and expeditious method, as when united it is difficult to perceive the union. The cuts must be cleanly made with a sharp knife, and the incision in the stock and the cut on the scion should correspond in length as nearly as possible. This latter method scarcely needs tying, as if properly done the scion will not easily move, and it quickly unites to the stock. In neither of the methods just described is clay or grafting-wax necessary, and the stock is not headed down but merely shortened by cutting a portion of the top away, leaving sufficient foliage to ensure a free flow of the sap. The plants should be placed as soon as worked in close frames or cases. If in early spring, the latter should be in a house where a regular temperate heat of about 55° is maintained; and if in the summer, they may be placed in any ordinary glass structure where shade can be easily given them. After the first few days air must be admitted every morning and increased in amount when the graft begins to unite to the stock, which is easily perceived by a white callus being formed at the union of the bark. As soon as the graft appears to have fairly taken the sashes may be entirely removed, and in the course of a week or ten days the plants may be placed in a cool frame, where it is, however, advisable to shade them from the hot sunshine. The regular daily admission of air is the most important point to be observed, as, if neglected, the grafts are apt to become yellow and fall off, and much to the surprise and disgust of the operator this will often happen, even after the plants are turned out to all appearance in good vigorous health.

Byfleet. JOHN CORNHILL.

Evergreen and Deciduous.—Than this no division is better understood. He would be a bold man who ventures to throw a doubt on the fact that trees and shrubs are either evergreen or deciduous; but it may have escaped the notice even of naturalists that the division is not quite perfect, and for this reason that, although no deciduous tree (as generally understood) is evergreen, yet some evergreens are deciduous. Indeed, by far the greater number of them shed their old leaves as the new ones take their places, as any one may observe at this time of year by looking at the ground under a Holly, an evergreen Oak, or most of the Pine trees. This rule is so general, that it need not be remarked on if it were not for the fact that some evergreens are not deciduous. My attention was first drawn to this fact by observing the Araucaria imbricata, whose spikes never drop off, but appear to be gradually absorbed into the stem, and if they be forcibly removed Nature does not replace them. I have gone on to observe that the same rule applies to Wellingtonia and to all the Arbor-vitæ tribe, and, as far as I can see, also to other Conifers, such as Picea nobilis, but I would request some better-informed observer to give us the benefit of his knowledge on the subject.—I. T.

Large Walnut Trees.—There is a Walnut tree here which measures as follows:—16 ft. girth, not measuring the roots, and the branches cover 297 ft. circumference. I am under-estimating the amount of timber by putting it at 223 ft. Is this unusually large? Where are the largest Walnut trees on record in Britain?—H. M. RIDLEY, *Downland House*, *Liphook*, *Hants*. [This must be an exceptionally fine specimen, and, if sound, it is of considerable value. The great spread of branches and cubical contents are particularly remarkable. It is probably one of the largest examples of the Walnut tree in Britain. There is a fine Walnut tree at Rufford Abbey, Notts. The girth of its butt, which is only 4 ft. long, is 21 ft. 10 in. at 2 ft. above the ground. The stem divides into huge limbs at 4 ft. up, forming a not particularly handsome head.]

Ash Trees Splitting.—On a property in Ireland a large number of Ash trees used to grow. A certain number are still there, and unusually large in size; but when they reach about the age of thirty-three years' they begin to split down the trunks, and thus in time they die. Can any of your readers explain the cause of this?—H. M. R. [It is not easy to account for the splitting of the Ash trees in question with any degree of certainty without knowing more particulars, or personal inspection. Probably the soil and subsoil are not favourable to the healthy growth of Ash. Ash timber is often grown where the soil is light, thin, and poor, and although the trees seem to thrive and grow rapidly for some years, and to outward appearance the timber looks clean and of good quality, it is generally the reverse, being short in the grain, brittle, and inferior. Where plantations have not been regularly and judiciously thinned when young, and the trees allowed to get thick and drawn up, and then subjected to a severe thinning, the sudden exposure to rough and prevailing winds will cause many to be blown over, and in the case of Ash, most probably many will be split from the fork downwards. Ash trees should be planted in loams and clay soils, to become valuable timber and of first quality.—ED.]

Siamese Twin Trees.—An example of this kind of abnormal growth may be seen in Windsor Park, near the Bishopsgate entrance lodge, Englefield Green, very near the water tower]in Baron Schrœder's grounds, on the outskirts of the park. Two very large centenarian Beech trees, springing apparently from the same root, are united at about 14 ft. up. A hundred yards or so further on may be seen, through a forest vista serving as a frame to the picture, perhaps the most charming miniature view of Windsor Castle to be seen in the vicinity.—TOM SMITH, *Glanty House*, *Egham*.

—— I was induced this morning to make a sketch of two Oak trees, standing about 5 ft. distant from one another, which trees apparently started in life quite independent of each other, but, after growing in this unfriendly state for many years, they must have determined to live together; one, therefore, took a header into the other, and this being received in a friendly spirit by his neighbour, they have grown up as one tree some 35 ft. or 40 ft high, quite healthy, and vigorous. The junction is made some 10 ft. or 12 ft. from the ground, and makes a picturesque arch seen from a footpath close by. My woodkeeper, who has been on the estate with me for many years, says he has met with several instances of "Siamese twin trees;" but they have generally been rather higher up the trunk of the tree than in the sketch sent by Captain Morris.—H. M. HAWLEY, *Tumby Lawn*, *Boston*, in "Field."

FLORAL ARRANGEMENTS AT REGENT'S PARK.

IN addition to the exhibits which one is accustomed to see at the evening fêtes held by the Royal Botanic Society, several new classes were added, some for flowers arranged for a head-dress, garlands for personal adornment, wreaths of flowers or leaves, set of six specimen glasses for a dinner-table, &c. The specimens staged in several of these classes were so good that many equal awards had to be made. As a rule the sprays arranged for the hair had a tendency to be overdone, and too many flowers were employed. In the lightest-looking and best made one, the exhibitor had not gummed the Pelargoniums, and therefore if touched it would have fallen to pieces; arrangements of this kind require to be made as light-looking as possible, the flowers selected of varieties that last best, and if of a description that requires preparing, let the preparation be well done. In the class for garlands for dresses, those staged were one and all very pretty; the same may be said in reference to the class for six specimen glasses; all were made like button-hole bouquets, save those to which the first prize was awarded, and they were made all round in the form of table bouquets, and were composed of light-looking and light-coloured flowers, and wild Grasses. The entries in the class for a centre table decoration were much above the usual number, and there was not one badly-arranged stand staged. The table decorations were much about the same as usual, except that in one class the tables had to be furnished as well as florally decorated, and, as a rule, the exhibitors were not evidently so much at home in the furnishing as in arranging the flowers. An extra prize was awarded to one table arranged quite in the old style; as far as the arranging of the flowers went, they were heavy and packed, but a very fine effect was made by the colouring of the stands, glasses, plates, &c.,—all were well blended, and a rich effect produced, which would have been further enhanced had they been on a handsome table without a cloth. In the miscellaneous class some pretty crosses were shown, suited for church decoration, as well as other purposes. Amongst the tables I noted one on which the flowers employed for decoration were nearly all white, with the exception of a few crimson Rosebuds; they were charming, but, from being nearly all white, a dead effect was produced, but had there been mats of crimson cloth or velvet under the stands the general effect would have been improved. On the whole, the Royal Botanic Society are to be congratulated on their exhibition, which was the largest and best I ever remember seeing in the Regent's Park.

ANNIE HASSARD.

WILD FLOWERS ON THE SEA-COAST OF WIGTOWNSHIRE.

THESE are in great profusion this year, and I was so much struck by the variety and quantity that, as I walked along the high road lately, I jotted down the names of those that were most abundant and gay. The list includes some interesting species:—

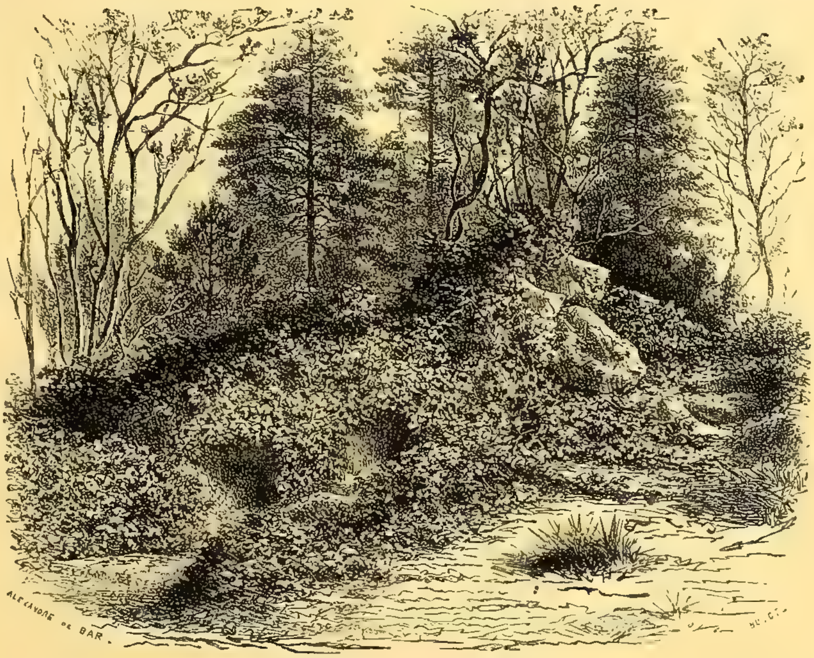
Anthyllis vulneraria
Armeria vulgaris
Asplenium marinum
Astragalus glycyphyllos
Convolvulus Soldanella
Digitalis purpurea
Eryngium maritimum
Geranium sanguineum
Glaucium luteum
Glaux maritima
Hypericum Androsæmum
,, Elodes
Iris pseudacorus
Jasione montana
Lonicera Periclymenum
Lotus corniculatus
Lychnis Flos-cuculi
Lysimachia nemorum
Malva sylvestris
Mertensia maritima
Myosotis palustris
Ononis arvensis
Orchis maculata
Oxytropis uralensis
Polygala vulgaris
Rhinanthus Crista-galli
Rosa pimpinellifolia
,, rubiginosa
Rosa canina
Scutellaria galericulata
Sedum Telephium
,, acre
,, anglicum
Silene maritima
Thymus Serpyllum
Verbascum Thapsus
Veronica Beccabunga
,, Chamædrys
Vicia tetrasperma
,, sylvatica
,, sepium

SALMONICEPS.

Thinning Fruit.—We have frequently pointed out the great advantages of thinning fruit on the trees while yet small. Many of our readers know that for marketing, well-grown specimens that have had plenty of room to develop size and quality, will sell at much higher prices than poor and crowded fruit. In one experiment, recorded in the "Country Gentleman," after two-thirds of the fruit on trees of Louise Bonne of Jersey had been taken off, the crop was not diminished in quantity; it would have been better if three-fourths had been removed. The objection that additional labour is required for thinning is not valid, as it is much easier to pick off the young fruit when no care is necessary to prevent bruising, than to hand-pick the same specimens after they are fully grown, and then to assort them carefully by rejecting all the poor ones. Well-thinned crops need little assorting. In thinning Apples and Pears, throw off the small, imperfect, and wormy specimens, and leave the largest and smoothest. In this way the insects are early destroyed, and the trees will not be exhausted by bearing a surplus of worthless fruit. The earlier the work is done in summer, the better for both tree and crop. It is worth experimenting definitely to ascertain what distances are most profitable for the remaining fruit after thinning.

HYDRANGEA PANICULATA GRANDIFLORA.

Of this hardy, robust-growing, deciduous shrub, a coloured plate of which appeared in The Garden (see p. 264, Vol. X.), I have a good specimen in the nursery fully 6 ft. high and as much through, which has been a mass of bloom during the past month or five weeks; I should think almost every bud on last year's wood has pushed forth a flower-spike. The buds are set opposite and in pairs along the drooping branches, and when they burst into blossom the latter present a pretty wreath-like appearance, all the branches arching one over the other from the base to the top. The flowers are palish when first opened, afterwards changing to pink and rose, somewhat resembling Weigela rosea in both foliage and flower, but it is a much stronger grower and the flowers are larger. My plant of Hydrangea, when not in leaf, might easily be mistaken for a Deutzia scabra or Philadelphus coronarius, on account of its strong woody growth. As a proof of how quickly a large bush may be grown, I bought it in a 4-in. pot six years ago, it being evidently a cutting-struck plant the previous year; it would have been much larger, only I kept it in the nursery for a stock plant, and I have taken some scores of cuttings from it; they strike as freely as any common shrub in the open ground. Many that were put in last winter are now in bloom, the flower-spikes being much larger than the actual plants or cuttings. This plant is, I think, a real acquisition amongst the many beautiful deciduous flowering shrubs. It should have plenty of good soil, as I find it, as well as most other shrubs, will well repay for liberal treatment. A good thick layer of manure laid over its roots in autumn or spring is the sort of stimulant in which it delights. Many trees and shrubs are nearly starved to death when planted out for want of a little extra attention to encourage them to start into vigorous growth at once. They are often planted in small holes with nothing but the original poor soil covering the roots, and then left to take care of themselves—the result, of course, is failure.—G. B.



Rocky Caves covered with Ivy.

ROCKY CAVES COVERED WITH IVY.

Conspicuous common-looking buildings in gardens have been among the most effective means of neutralising any good effects therein, as, for example, the wooden structures in the centre of various London gardens. The accompanying illustration shows a successful attempt to hide with graceful vegetation (Irish Ivy) some caves for storing tools, and also, in part, serving as a shelter to passers-by in case of showers. These caves are almost completely covered with a mantle of Irish Ivy, which also spreads into the bushes and Grass around. Where the rocky masses forming the grottoes are seen, the effect is good, owing to the rock being well formed. The caves occur in a sloping bank backed with trees. It will be seen from this and from other examples that where such structures are necessary in gardens, it is easy to make them ornaments and not eyesores in the landscape.

BEST TIME FOR MANURING ROSES.

Roses require feeding. The more food the richer the colours, the larger the size, the more solid the texture, and more marvellous still, the sweeter the fragrance. There is, however, a proper time for manuring Roses. Many give it too late in the season; they seem to imagine that when the strain is heaviest on Roses or other plants, that is the time to assist them with stimulants, and so it would be could the stimulants get at them, but it takes a long while for solid dressings applied at the root to reach Rose leaves or flowers. Even liquid manure, of which we are accustomed to speak and write as if it acted at once, takes days, weeks, and even in some cases months, to reach the points where it is most needed in our Rose trees; while as for solids, they have to undergo no one knows how many processes of comminution and chemical decomposition, and perhaps recomposition, before one particle of their strength can go to support the Rose either in its efforts at growing or flowering; hence the best time to manure Roses is, probably, November. Winds, rains, frosts, snows, sunshine and showers, heat and cold, all these prepare the manure for the plants and assist the roots to absorb it. The roots, too, are also abnormally active during winter; they never cease absorbing unless when frozen, and then during the winter and early the manure may be turned in or out, or tossed about, in any way best suited for the Roses, without creating much or any annoyance to any one.

Under such circumstances, Roses feed at their leisure all the winter, and are well furnished for their work before their flowering season in June. On the same principle, even manure-water should be applied early. March and April are much better months for saturating Rose-beds with sewage and other manure-water than May or June. Water is no doubt quickly absorbed, but it is exceedingly doubtful if the manure can be appropriated by the plants in anything like the same time; or whether, in fact, it does not really take a long time to convert any of the strength of the manure into Roses. Besides, it is of the utmost importance for the proper enjoyment of a Rose garden that it should be kept sweet and clean throughout the flowering months. What are called surface-mulchings might also generally be dispensed with. They are mostly composed of some loose, unsightly material of slow-conducting powers, to keep the moisture in and the heat out. But a loose surface of the soil itself would answer either purpose as well or better, and prove at the same time neat and sweet. Roses are also often rendered disagreeable through the application of insect remedies of various sorts—such, for instance, as Tobacco-water, sulphur, and Scotch snuff. All such dressings should be forbidden. Only three remedies against insect-pests are at once effective, cleanly, or pleasant. These are the finger-and-thumb cure in the early days of the grub or aphides, heavy washings with clean water from a powerful garden-engine, or doses of carbonate of ammonia, or smelling-salts, applied with a sponge or a small squirt. This last destroys the insects, adds a new perfume to the Roses, and seems to invigorate their growth and enhance their beauty.

D. T. Fish.

A Green Rose.—Dr. Wakley has shown us blooms of a green Rose, which he states were produced on bushes of very large size, and which have borne similar blooms for several years past. It is understood to have originated in America, from a sport from the old China Rose. Concerning this Rose, the late Prof. Lindley wrote, in 1860, as follows:—"There is to be found in French Rose catalogues a certain R. Bengale verte, which we seek in vain in those of England. In the "Prix Courant" for 1857, of Guillot Père & Clement, of Lyons, mention is made of a certain Rosa viridiflora, first introduced into the world in the autumn of 1856. Some thought this an apocryphal announcement, most believers formed an opinion of the new comer by no means complimentary, a very few resolved to judge for themselves. At last the has Rose appeared in various places between Ross-shire and London, and very strange it proves to be. Conceive a China Rose with every part bright green, deep on the outside, pallid in the middle; the calyx wholly unchanged; the five natural petals transformed into five, small, broad, green leaves, and all the rest of the centre consisting of pale green straps of various degrees of narrowness, spreading evenly round the middle and forming a green star with innumerable points. Such is the Rose Bengale verte. Scent it has none, nor does it show the feeblest indication to exchange its verdure for a rosy hue. It is, however, quite regular in its form and greenness, no change having been remarked in it since the year of its birth. It is now a well-established five-year old, with a fixed habit." Mr. Brown, of the Exotic Nurseries, Tooting, where a plant of this Rose may now be seen growing, informs us that he has known the plant twenty-two years, and that it has experienced no change during that time.

Garden Design.—The teachings on landscape gardening that are more or less applicable to all grounds, may, I think, be briefly summed up as follows:—1st. Grounds must be sufficiently graded—or, if not, a system of underdraining must be resorted to. 2nd. Lay out paths and drive wherever needed and only there. Let them curve as if of necessity, and as much as possible so that this appearance be preserved. 3rd. Then plant fruit trees—deciduous and evergreen ornamental trees as closely as possible so that each may develop the form that belongs to it in its finest maturity, and so that liberal areas be left for carpets of velvety Grass—the choicest gem of all. If we be willing to transplant or remove them, as in later years they begin to interfere with one another—then we may prefer to set them so closely together that a year or two will suffice to obliterate that new, naked look so painfully conspicuous in newly-laid out grounds that, under the old plan, would require double the time. 4th. Arrange the shrubs and trees so as to conform, in a measure, to the paths and so to create secluded, shady, cosy nooks and openings through which the eye may range as far as the grounds permit and rest only upon verdure. 5th. Plant only low shrubs immediately about the house. 6th. Let the size of the trees in maturity be adapted, so far as may be, to the extent of the grounds. 7th. Give to each, as far as practicable, the soil and situation best adapted to its needs. 8th. So intermingle evergreen and deciduous trees that the evergreens may have proper winter distribution. Do not confine them to the N. S. E. or W.—but ever bear in mind that evergreens are "friends in deed," since they cheer up when all else is naked and shivering, and we have only them to depend upon for the bright relief of our winter grounds.—E. S. Carman.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Dracæna australis in Flower in Devonshire.—There is now at Gorway, the residence of Mr. Whidborne, a splendid specimen of Dracæna australis in full bloom in the open air. It was planted about five years ago, and is now 10 ft. high to where the flower-spike is showing. This spike is 4 ft. high, and 3 ft. through at the base, and is a perfect mass of white bloom. It is situated high above the sea, and has received no protection of any kind.—J. D. N.

Roses on their Own Roots.—Mr. George Paul, at a meeting of Rosarians which took place the other evening in St. James's Hall, objected to these. He preferred to bud low and plant deeply, by which he maintained there was received—first, the impetus derived from the roots of the stock, and then the further support and permanency to be derived from the natural roots afterwards produced from the budded portion.

Floral Effects in Borders.—For a spring and early summer border, a pretty effect can be produced by mixing Myosotis dissitiflora with Silene pendula compacta, using either for the edging of the other. Some bedding Pelargoniums can be reserved at the planting-out season to take the places of the Silene and Myosotis when required. Sow now for next year, and plant the seedlings in their places when the Pelargoniums are removed.—B. S.

A Dahlia Catalogue.—It puts us in mind of some thirty years ago, to see a beautifully got up catalogue wholly on Dahlias! It is from Mr. Max Deegan, junior, and from Kostritz in Thuringia, and we really think the Dahlia deserves more than the cool treatment it has had of late years. Mr. Deegan grows only Dahlias, having given up all other branches of the floral business for them. Such devotion deserves reward.—"Gardeners' Monthly."

THE KITCHEN GARDEN.

LETTUCES AND THEIR CULTURE.

Lettuces appear to have been in cultivation ever since the time of the ancient Greeks and Romans. They form, when properly grown, a remunerative crop, inasmuch as a large quantity of them may be grown in a little space, and being quickly off the ground they may be cultivated in many vacant places that could not be otherwise properly utilised, such as between rows of Celery, close under walls, between fruit bushes, &c. Lettuces are mostly placed on the table whole, or at least the leaves are not cut, but they are also used cut up in salads with other ingredients, and of late years it has been a custom even to boil Lettuces in the same manner as Cabbages. In order to have a good supply of Lettuces at all seasons of the year, glass structures of some kind are indispensable. The French use cloches, (*i.e.*, large bell-glasses), for salad growing with marvellous success, and they might be tried here. One of the greatest aids to good Lettuce culture is a deep, rich soil, and it is far easier to make it deep and rich enough in the first instance than to struggle on through a hot, dry summer on a poor, hungry soil, harassed by the necessity for incessant watering to keep the plants from bolting. The first requisite in Lettuce culture is a well-manured, deeply-cultivated soil—all other things are, in a sense, subordinate to this—and the next is frequent sowing and planting.

Sowing, Planting, and Mulching.

Where the demand is regular and constant, a small sowing of two or three sorts once a fortnight from March till September will ensure a supply, and save a good deal of annoyance. The first spring sowing should be made in February, in a gentle hotbed if possible, or if the hotbed cannot be spared, then a box or two may be sown and placed near the glass anywhere, to be gradually hardened off, and finally planted out in April. It will succeed the last sowing made in September, and very frequently the finest Lettuces of the season will be produced from this February sowing. Towards the end of June and through July, sow on the north side of a wall, and thin the plants out according to the size of the kinds grown; 8 in. apart will be sufficient for Tom Thumb Cabbage Lettuce, whilst the larger kinds of Cos and Cabbage will require 10 in. or 12 in. Sow in drills, as it gives facilities for frequently stirring the soil with the hoe. The thinnings, if desired, may be planted elsewhere; but if the season be hot and dry, those that have not been transplanted will probably be most satisfactory. When hot and dry weather sets in, mulch with rotten manure, if possible, between the rows, laying it nearly up to the plants. A very great thickness will not be necessary; 2 in. or 3 in. at the most will be sufficient. This mulching saves a deal of labour in watering in dry summer. In fact, without mulching, on some soils watering is worse than useless; it encourages, during the time the effect of the water remains, the production of fibres near the surface, and if the water be neglected for even a short time these fibres perish. Far better will it be on hot soils, if mulching cannot be resorted to, to deepen the soil in every possible way, keep the surface loose by constant hoeing, and discontinue watering altogether, unless a regular and constant supply can be given. But when plants are mulched, a watering once a week or so washes the soluble portions of the manure down to the roots, and pushes on the plants rapidly. The last autumn sowing should be made about the middle of September, on a warm south border, to stand in the seed-bed over the winter, as it frequently happens small plants survive a severe winter when larger ones perish.

Blanching.

This process is probably the most vital point in Lettuce culture, for to have badly blanched Lettuces, no matter however fine they may be in other respects, they are wanting in crispness, flavour, and appearance. There are now so many kinds of Lettuces that naturally turn in and blanch themselves, that these are probably the most likely to give satisfaction to most people. Where, however, those kinds are grown that do not naturally turn in, tying must be resorted to. This operation should at all times be performed on dry days, for if tied up while the leaves are wet, losses from rot will be the result. Tying should be done when the plants have nearly attained their full dimensions, and two ties to a plant are better than one if time can be spared for it. If, however, Lettuces be wanted before they have time to grow to their proper size, they must be tied up at least a week previous to use.

Varieties.

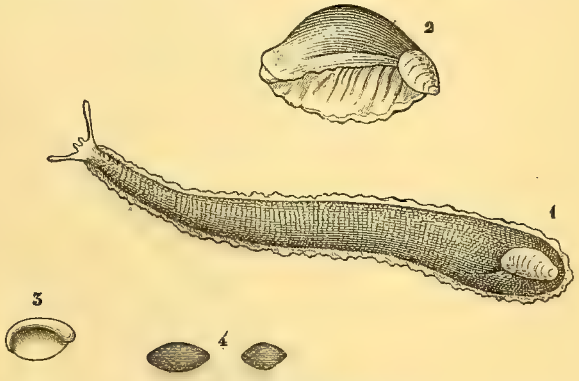
Varieties of Lettuce, like those of most other vegetables, are known under so many different names that it is almost impossible to ascertain the true name of any of them. Perhaps to answer all purposes there is no Lettuce to equal the Black-seeded Brown Cos, whose chief faults are its wanting tying in order to have it properly blanched, and its brown colour. If, however, it be well tied, the inner leaves may be had of a pure white with purple ribs. Among the varieties of Cos Lettuce we may mention Alexandra (white), which grows to a large size, and is crisp and finely flavoured. The Paris White and Green Cos are too well known to need much comment; for summer use, as every one knows, there are few to equal them, blanching themselves as they do in the most perfect manner, and thus obviating the tedious task of tying. Williams' Victoria, too, is a fine dwarf kind, and excellent for winter use. The best kind of Cabbage Lettuce is probably Hammersmith Hardy for winter, and All-the-Year-Round for summer; the old Neapolitan, however, still keeps in the front rank. Wheeler's Tom Thumb, Lee's Hardy Green, and White Dutch, are all good kinds. Commodore Nutt is a Cabbage Lettuce of the All-the-Year-Round type, but it proved to be still dwarfer than that variety. It is nearly all heart, does not run to seed so soon as some of the larger kinds, and is a great acquisition, owing to its taking up so little room in beds or rows. Sutton's Gem is another Cabbage Lettuce of a large size, and one which forms good hearts, which are crisp and well-flavoured. One market gardener, writing on the varieties of Lettuce, remarks that, after careful trials of many sorts of Cos and Cabbage Lettuces for several years, it has been proved that most of the so-called new kinds of white Cos are, after all, but mere selections from the old Paris white Cos. The two best strains are Waite's Alexandra and Dimmick's Victoria, the first being exceedingly even, true, and slow to run to seed; the latter also inherits most of these qualities, and is specially to be commended for its great size and usefulness for exhibition. Of winter Cos Lettuces the largest and best are Acme, White Cos, a very fine hardy variety, and Sugarloaf, Brown Cos, a strain of the Black-seeded Bath Cos. Neither of these require tying, and they are without exception first-rate. Among Cabbage Lettuces, the best is Leyden White Dutch for the earliest. If sown with the summer White Cos kinds, it will be ready for cutting a fortnight before them; and with it also sow Victoria Cabbage Lettuce, a fine solid kind, but several days later, and one which stands well. For winter work sow in the end of July and beginning of August Stanstead Park Brown Cabbage Lettuce, the finest grown, and with it Fearnought Cabbage Lettuce, which is made like the last, but stands longer. Than these no better selections can be made. S.

PARSLEY AND EARLY HORN CARROTS.

A good breadth of these sown now will prove to be exceedingly useful, but no time should be lost in getting them in. A south or sheltered border will be the best site for them; it should be dressed with a sprinkling of guano or some other artificial manure, or, if more convenient, the drills may have a good soaking of liquid manure just previous to sowing the seeds. The drills for the Carrot may be 8 in. apart, and as soon as the young plants are up thin them out to 6 in. apart in the rows; this will be sufficient, as the largest may be drawn for use when about the size of one's thumb, and the operation of drawing them fresh from the ground should be continued all through the autumn and winter, merely protecting with a thin covering of dry litter when severe weather sets in. The Parsley drills should be 1 ft. apart, and the young plants should be thinned out to 5 in. or 6 in. asunder. I have a bed that was sown about this time last year that is far superior to any sown in the spring, in fact, without it in a backward season like this I do not know how we should manage; not a dozen plants have shown any symptoms of running to seed, and they will not do so before next year. With a good breadth sown now, and some efficient means of protecting during severe weather, there need be no scarcity of good Parsley.—E. Hobday.

Early Peas in Pots.—I have practised growing early Peas in pots with success for the last ten years, and in backward springs like the past they are most useful in furnishing early dishes. They are grown in pits built on purpose, so as to have them near the glass, and the dwarf early varieties only are grown, such as Little Gem, Multum-in-Parvo, and Blue Peter. This year I have tried The Shah, one of Mr. Laxton's new early kinds, which grows rather taller than the sorts just named, but it is a good cropper, excellent in flavour, and is likely to prove one of the best early market varieties when it gets into general cultivation. The pits here, after the Peas have been all gathered in May, are useful for growing Tomatoes, Capsicums, and Vegetable Marrows in, and being heated with one row of 4-in. piping all round, severe frosts late in autumn or winter are prevented from injuring the plants grown in them. The Multum-in-Parvo Pea, gathered in the end of April or early in May has as fine a marrow flavour as that of Ne Plus Ultra or Dr. McLean in summer. —William Tillery, *Welbeck.*

Testacella haliotoidea.—We lately had occasion to speak of this slug—which one of our correspondents blamed for eating the roots of his plants. We explained that the Testacella was carnivorous, and therefore must have been unjustly charged with the supposed mischief. We now give illustrations representing it extended and contracted, in which the characteristic shell is well seen.—M.



Testacella haliotoides.
1. Extended. 2. Contracted. 3. Under side of shell. 4. Eggs.

PARAFFIN OIL AND SEEDS.

There seems to be considerable diversity of opinion as to the safety of using paraffin oil in preventing seeds from being destroyed by vermin. We have formerly suffered very much in this way from rats, mice, and game, especially from pheasants and rats, so that we were obliged to cover all such things as Peas, Beans, &c., with wire netting; the netting kept the pheasants at bay, but of course was ineffectual as regards rats. In order to beat off rats I used to damp such things as Peas, Beans, &c., and then dust them over with crushed fiddler's rosin and arsenic, until they were coated over with the mixture. This had the effect of keeping them off for a time, but as soon as they burst the husk and began to grow, then the rats began at them as badly as ever. I have lost three sowings of Peas in succession by rats. This season I began to use paraffin oil as a preventive, and I must say with perfect success, so that I have not made use of any other protection whatever. The way I use it is this—I put what Peas or Beans I mean to sow into a biscuit-box, and pour on top of them some paraffin oil (one glass is sufficient for four quarts of Peas), and shake them about till they all get well moistened, and then sow immediately. It has not, in any case, prevented germination in the slightest degree; indeed, from the luxuriant way the Peas are all growing, I rather incline to think it has acted as a stimulant to vegetation. Though the vermin above-named are as numerous here as ever they were, they have hardly ever attempted to touch them. At first both rats and pheasants scraped up some and tasted them, and then they seem to have turned tail on them in disgust, and now they never even attempt to scratch them up. I sowed a lot of Broad Beans without putting oil on them, and all have been eaten up. I have also tried it with success in keeping sparrows from eating the haulm of young Peas, by syringing them with a mixture of one glass of oil to 2 gallons of water. It requires to be repeated occasionally. Except in the case of Turnips, I have not tried it on any small seeds. After well moistening the Turnip seed with oil, I put a handful of dry sand among the seeds, and rubbed all through each other, as it would not be possible to sow it without something dry mixed among it: and neither in this case has it injuriously affected germination. In one instance it has done harm with me—in the case of some young Peach trees which had got very much affected with black fly. As fumigating with Tobacco had no effect on the fly, I tried paraffin, in the proportion of two glasses to a gallon of water, and bent the shoots down, shaking them about in the mixture for a few seconds. It did kill the fly, and every leaf it came in contact with as well, even the tips of the shoots. Probably the mixture was too strong, but I should hesitate in using it at all on any tender foliage. A farmer in this neighbourhood informs me that he steeped Peas twenty-four hours in pure paraffin, and then sowed them, and he thinks almost every Pea grew, though they were swelled up ready to burst when sown. This is not at all necessary, however, to attain the object in view, and I consider the risk too great. The same person also poured it in a highly diluted form along his rows of Carrots about the time they are generally attacked by the maggot, and he had a fine crop of clean Carrots, whereas he formerly could not get any free from disease. I mean to try this myself this season.—John Garrett, *Whittingham, in* "The Gardener."

Bird Destroyers. — The paragraph in The Garden (see p. 21) reminds me of a circumstance which I lately witnessed. Passing through the garden of a friend in this neighbourhood, I saw five sparrows which had been shot by his gardener, hanging on a string over what should have been a row of Peas. The poor birds had been shot for pecking off the young Peas, the fact being that they had been engaged in the destruction of the real culprits, the Pea weevils; and the gardener lamented that although he had destroyed "ever so many sparrows" the evil had not been stayed. It is almost possible to fancy the Pea weevils, while luxuriating on the few remaining Peas, also enjoying the fate of their arch enemies—the sparrows; it was much as though in a neighbourhood noted for burglaries, a few policemen on the look-out for the culprits should have been impaled as a warning to the burglars. The ignorance of cultivators whose occupations it might be supposed would teach them the habits of birds and of insects is almost beyond belief. Is there any book on birds, and also on entomology, which (in a concise form) would enlighten not only them but also their employers?—J. Rennie, *Milford.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

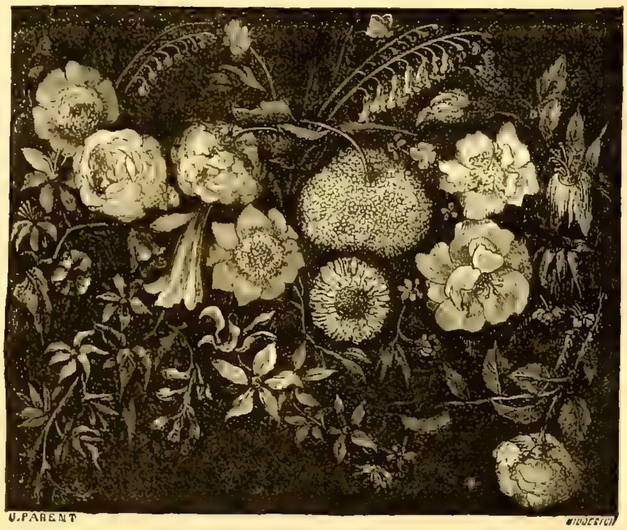
Tomato Farms.—Much as our readers know of the general use of Tomatoes, we doubt whether they have any idea of how extensive their culture for preserving is. There is a Tomato-growing company in King William's Co., Virginia, that plant this year 700 acres. The seeds were started under six hundred hot-bed sashes. The yield is about a peck to the hill. These farms are mainly for the canned Tomatoes now beginning to be so well known in London.

Asparagus.—The advantages of Asparagus are not sufficiently appreciated. It is said that those who suffer from rheumatism are cured in a few days by feeding on this delicious esculent, while more chronic cases are much relieved, especially if the patient avoid all acids. The Jerusalem Artichoke affords a similar relief. [This is one of the notes—and varied notes—of the "Court Journal," which appears to be unsupported by any proof. No doubt it is as useful as any other wholesome vegetable.]

Charcoal or Alkali.—Charcoal as an ingredient in soil has been highly recommended by some plant growers, and decried by others, but the gist of the matter seems to be that pure wood charcoal or vegetable carbon is mostly beneficial, and never hurtful to the tenderest plant. On the other hand, much of the so-called charcoal used in some gardens is picked from the rubbish-heap fire, and contains as much alkali as carbon, and this latter is very hurtful to the roots of most plants, as is shown by the deserts near Salt Lake City, Utah, where hundreds of acres of land are uncultivatable and totally barren.—B.

THE GREAT FLOWER PAINTERS.

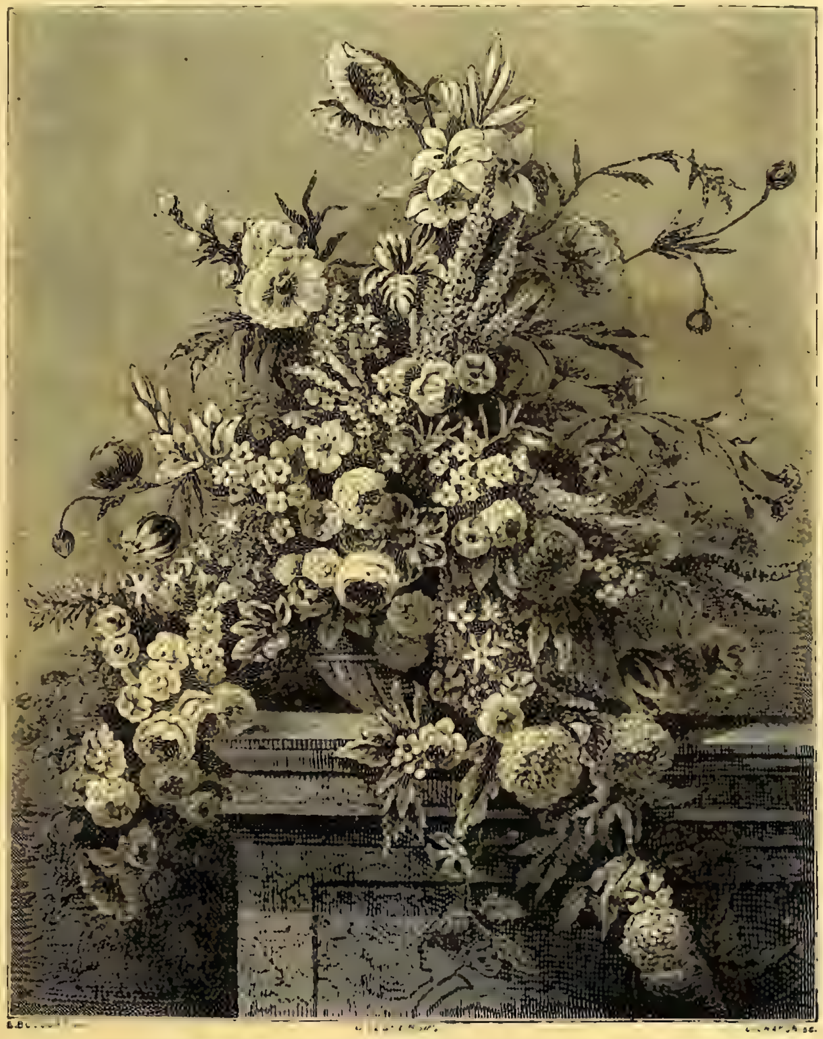
DANIEL SEGHERS—BORN 1590, DIED 1661.



Works of the Great Flower Painters: Group of Flowers by Seghers.

Among the flower painters of the Flemish school, Daniel Seghers, the Jesuit, was distinguished for his large, free, and partially idealistic method of painting, founded partly on his own individual taste, and influenced, no doubt, by the broad and dashing manner which the masterly brush of Rubens had communicated, not only to painters of his own walk in the higher branches of historical painting, but more or less to other styles of pictorial art, even to the animal and the flower painters. There is a freedom and breadth of touch in the flower painting of Seghers, which the great painter of the "Descent from the Cross" and the "Life of Marie de Medicis," by his fascinating and magnificent facility of execution, communicated even to the sister arts of sculpture and engraving. Seghers not only became imbued with that dashing manner, but even in some respects went beyond it, in the direction of a reckless disregard of the relative proportions of his floral models, and often in the characteristic individuality of the foliage proper to each flower. His groups, grand and attractive at a glance to every spectator, and always so to one unacquainted with the botanical character of popular flowers, will seldom bear a careful analysis. His Jesuitical dogmatism followed him into his painting —"So shall be my Rose," he seems to have said, "and so my Lily." This kind of pictorial despotism is strikingly illustrated in a well-composed group of flowers preserved in the Museum of Lyons, of which the large engraving is an excellent reproduction. It will be seen that the White Lily (Lilium candidum), at the top of his composition, is almost entirely evolved out of his own impressions and recollections, rather than from a conscientious study of the plant itself, and yet the masterly treatment of the Lily buds, in a few happy touches, renders the identity unmistakable—though the expanded flowers have but little of the peculiar elegance of their well-known character—but the mass of white does its duty well, which is all that he intended, and forms an excellent apex to the composition. In immediate juxtaposition with his Lily, he required a contrast both of form and colour, and has apparently taken one of the many kinds of Chrysanthemum as his model, making the flowers larger than those of the Lily, to suit his special purpose; while immediately below, to the left, is a stem of Hollyhock, which, happening to be on the external edge of the entire group, he feared to make too heavy, and therefore without hesitation reduced the size of the flowers to something less than that of the Chrysanthemums. The sprays of the Orange variety of the "Prince's Feather" are well treated, and, as it suited him to give them their proper proportion in relation to the other plants, he has, in this instance, adhered more closely to Nature. His Roses, on the other hand, are unnaturally small, indeed, insignificant in size—an arbitrary departure from the grand characteristics of the flower which was no doubt intentional. He required, for carrying out the theory upon which the composition of his group was founded, several distinct shades of pink paling to blush, and blanching into white, and with that intention, one or two grand Roses alone would not have enabled him to carry out the idea. He therefore introduced many instead of two or three, each one exhibiting an individual tint of its own—a proceeding which is of the highest value in forming that useful artistic device, a mass of distinct yet closely allied tones. A plant, with

Campanula-like flowers—probably a stem of Campanula pyramidalis—is thrown out at the side of the general mass in a drooping manner, regardless of its naturally erect habit; and many other objects in the composition are made to play arbitrary parts in such an exceedingly dogmatic fashion that it would be difficult to assign to them any specific name. Even the branch of Viburnum with its balls of white, the florets of which are well indicated, is made to play the part of a drooping spray—as he required such to straggle over and break the horizontal lines and mouldings of his marble slab, and to light up the deep mass of shadow over which the depending branch is made to stray. In the midst of all this defiance of accurate treatment of any special plant, the group, taken as a whole, represents the beauty and profusion of a luxuriant mass of flowers, with a truth and general effect which is charming, while scarcely a single flower, in its individual treatment, is truly painted; yet, with wonderful skill, the "modesty of Nature" is scarcely overstept, and Seghers, in a flower region of his own creation, charms the eye, even of the botanist, who, through the fascinations of art, refrains from any scientific criticism of a thing of beauty, which, taken from the point of view of its producer, possesses merits of invention and exquisite devices of pictorial skill, which he at once admits, admires, and enjoys. In the smaller specimen, from another work of this audaciously clever flower painter, there are still more reckless departures from his models, whether physically present or only existing ideally in the form of more or less imperfect reminiscences. There are for instance, sprays of an old spring favourite, Solomon's Seal, in which the typical elegance of the plant is happily caught, and yet the specific details are all but entirely absent, or incorrectly treated. Sprays of Clematis of two species, of a single white kind and of the double purple, are, for once in a way, botanically correct, or nearly so, because their natural characteristics happened precisely to suit his purpose in the position of his picture which they are made to occupy. The Roses, also, double and semi-double, are in some respects very fairly truthful, and yet a striking white ball of florets, which might be a Viburnum, or almost anything else, has had to submit to the idealistic and arbitrary treatment peculiar to the painter. Seghers received his earliest instructions in painting from his father, but subsequently studied under the celebrated Breughel, who was not only a delightful landscape painter, but also the greatest of Flemish flower painters of that day. At twenty-four years of age Seghers became an ardent and even fanatical student of theology, and in 1614 was admitted a member of the Company of Jesuits. He still, however, pursued his art, and soon became known beyond the boundaries of his native Flanders, and even in sternly Protestant Holland the talent of the young Jesuit was admired and actively sought after by enthusiastic amateurs. The Prince of Orange himself, deputing the Court painter, Willebouts, to obtain from Seghers one of his best works at any price, Seghers sent the Prince a magnificent group of flowers as a present from the Order of Jesuits, declining any kind of money payment. But the Prince, not to be outdone in generosity, sent to the Order a noble casket of jewels in return for the exquisite work in question. The Princess of Orange, in her turn, having succeeded in obtaining a grand work of the painter, who still refused to accept any payment, presented him with a pallet and maulstick of solid gold. His greatest works were, however, executed in and for the charities of Antwerp. In the Jesuits' church, the portal of which was designed by Rubens, he painted many of the finely-carved panels of Oak with wreaths, festoons, and garlands of flowers, the striking and yet harmonious colouring of which was deemed in every way remarkable. Like his master, Breughel, he was often employed to enclose the Madonnas and other works of Rubens and his cotemporaries with borderings of flowers, which not unfrequently found as many admirers as the greater works, which they not only framed but adorned.



Works of the Great Flower Painters: Group of Flowers by Seghers.

One of the favourite artistic devices of Seghers was that of painting his flowers on a black ground, which, while it aids the definition of his always graceful outlines, produces at the same time an occasional hardness which has been severely criticised. Our smaller specimen is an example of this practice of the artist.

H. N. H.

The Manchester Flower Mission.—The first year's work of the society bearing this title has just been concluded, and the committee have issued an interesting report containing information which will, no doubt, tend to assist them in the future. When the Mission was instituted only twenty-two bouquets could be distributed. The workers of the Mission have since met every Thursday morning, in the Association Rooms, Peter Street, and during the twelve months under review they have distributed 17,418 bouquets in weekly numbers varying from 22 to 798.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Verbenas, Lobelias, and Heliotropes for Bedding.—Carpet bedding has in some measure supplanted many of our best flowering plants, amongst which in particular may be named Verbenas, than which, when suitable varieties for outdoor culture are selected, there are few more desirable plants. To secure a stock from which to propagate next spring, some should now be placed in pots large enough to enable their attaining size and strength to furnish plenty of cuttings at the desired time; this will be found much better than depending upon autumn-struck plants, which frequently do not winter well without more care than is necessary with those that have been longer established in the pots. Use 8-in. pots and drain them sufficiently; in each place a spring-struck plant, which will generally be found to grow more freely than if struck in the autumn; put them in ordinary loam, to which add one-fifth of manure and a little sand. Out of the many varieties, by far the greater number are totally unsuited for bedding, for however fine the individual flowers may be, unless produced in quantity, and the plants possess a close habit of growth, they are worthless for outdoor culture; neither is it advisable to grow many kinds; the best representatives of the most decided colours will be found much more satisfactory than greater numbers. Amongst whites, White-as-Snow and Snowflake are the best; in reds, Basilisk and Ganymede (scarlet); Crimson King (crimson); and Purple King (purple), will all be found good. If these be well attended to with water through the summer and kept clear from insects and mildew, they will furnish abundance of cuttings in the spring. Lobelias should be similarly treated, as there is no dependence to be placed upon seed, for even when saved from the best-selected plants, it usually produces flowers of many different shades. Amongst the blue varieties Ebor is a splendid kind—for intensity of colour I have seen nothing to equal it; it is a most profuse flowerer, with a beautiful habit of growth, intermediate betwixt the compact pumila and speciosa sections. Lady Macdonald, white, edged with blue, is a fine variety. As a dwarf sort for edging small beds, pumila grandiflora may be selected; a few plants of these placed singly in 6-in. or 7-in. pots will furnish an almost unlimited quantity of cuttings in the spring. Some plants of Heliotrope potted on in like manner will be found equally useful to afford cuttings for either bedding or pots. Cheshire Hero (violet), oculata (violet with white centre), and Heloise Delesalle (lavender) are good kinds for beds or pot cultivation; 7-in. or 8-in. pots will be suitable for them. The above plants should if possible occupy a cold frame with abundance of air night and day, and be stood on a few inches of ashes to keep out worms.

Tricolor Pelargoniums are much more difficult to propagate than the green-leaved varieties, and, unless they are struck early in the season, many of the cuttings will damp off, and those that do succeed are not easy to keep through the winter, unless placed where they receive continuously a little warmth. Any plants of these to spare after the beds were filled should now be encouraged to make all the growth possible, in order to furnish a crop of cuttings by the middle of next month. Their requirements as to manure, either in a liquid or solid state, are very different to the green-leaved kinds, which latter, if too liberally treated in this respect, grow coarse and strong, whereas the Tricolors will bear a large amount of stimulating, either in pots or when planted out. Those that are intended to produce cuttings will be much assisted in making growth by being constantly supplied with manure-water, and when sufficient are thus grown to supply stock for increase, it obviates the necessity of taking cuttings from such as are bedded, with which there is usually a reluctance to interfere until late on in the season. The Silver Tricolors are not generally so much used for bedding purposes as the Golden varieties, but some of them are very beautiful.

Biennials and Perennials.—Sufficient space in the reserve ground should be now prepared for the reception of the different kinds of biennials and perennials sown some time ago. These, as soon as they are large enough to handle, ought always to be pricked out from 4 in. to 6 in. apart in nursery beds, where they can remain through the winter until spring, at which time they should be finally planted where they are to remain. It is a very common occurrence to see the plants left standing in the seed-bed until they are so weakened by overcrowding as to be of little value. If the soil in which they are to be planted be of a heavy adhesive nature it must be made lighter by the addition of sand and decomposed vegetable matter, so that the plants when removed in spring will have an abundance of roots, a condition not possible where the ground is close and impervious, but it should not be made rich by the application of manure, as the object is not to induce rank, succulent growth, but rather that of a compact character, such as will enable the plants to pass unscathed through the winter, and to suffer little or nothing whatever from the effects of their subsequent removal.

Flower Garden.—Where any of the large-leaved sub-tropical plants are used for bedding out, it is essential that they are never allowed to suffer in the least degree for want of water, which, from their strong free-growing habit, they need much more than subjects of smaller growth, and if ever allowed to get too dry, their lower leaves lose colour and have to be cut away, in which condition the plants have an unsightly appearance.

Roses.—Hybrid Perpetuals should be sufficiently syringed overhead to keep them clear from aphides, so as to encourage the production of second growth for flowering later on. The limited number of plants that amateurs usually grow admits of their being thus attended to, and the labour will be well repaid by the extra quantity of flowers they will bear throughout autumn. When the ground is at all dry, a good soaking of water at the roots will still further assist them in this way. Amongst the large number of fine free-growing Roses now in cultivation many will be found to succeed better in some localities than others, which knowledge can only be attained by individual experience. I should recommend amateurs in all parts of the country to take notes of the kinds that succeed the best in their own gardens and those of their neighbours, and for general decorative purposes to confine themselves to such sorts as grow and flower well. Half the magnificent Roses seen on the exhibition stages throughout the country are all but useless for growing, except where soil and situation are especially adapted to their respective requirements.

Kitchen Garden.—The rains which have recently fallen in many parts of the country will have a most beneficial effect on crops of all kinds. Advantage should now be taken of getting in the whole of the remaining crops of Broccoli, Kale, and Savoys, for winter and spring use. Where a portion of the plants, as recommended early in the year, were transferred to nursery beds, and another portion left thinned out in the seed-bed, the advantage of the former treatment will now be fully apparent, as on removal the plants that have been so pricked out will each be found to possess a dense mass of compact root-fibres, whereas those that have never been moved from the seed-bed will have extended much further, but not in such abundance, a circumstance which causes the plants in this condition to receive a much greater check in their future growth. If the soil be not sufficiently moistened by rain, the plants, before being taken up, should be thoroughly soaked; this is of much more consequence than giving water after planting, as when well moistened beforehand the roots will take up with little breakage. Any Celery remaining to plant should at once be put out. All crops, such as the earliest Peas, Broad Beans, and Spinach, that are exhausted, should immediately be cleared off and the ground dug for the reception of the foregoing plants, as upon thus carefully husbanding the resources a continuous and sufficient supply of seasonable vegetables through the winter and spring will depend.

Turnips.—Of these more should now be sown, and means be taken to preserve the plants when they germinate from being destroyed by birds and the Turnip-fly, as it is upon success with the present sowing that the autumn supply will mainly depend. Slight and repeated sprinklings with soot early in the mornings, whilst the dew is on the plants, I have found the most effectual means of saving Turnips from the fly, which, in dry districts where the land is not well adapted for the summer cultivation of this vegetable, is destructive to such an extent as to render its growth very difficult until the advent of cooler autumn weather.

Lettuce, Endive, &c.—Sow more Lettuce of both Cos and Cabbage kinds, as also Radishes, Mustard and Cress, where these latter are continually required; a little Green Curled and the Plain-leaved or Batavian Endive should likewise be put in. Spring-sown herbs, such as Marjoram and Thyme, especially the latter, should in dry weather be well supplied with water, otherwise from the late season it will have little time to reach maturity. Herb beds collectively, as well as Onions, and all crops where there is not much room to use the hoe, should be frequently hand-weeded. A few years' careful attention in never allowing any weeds to seed very soon diminishes their production to such an extent as to enable their being kept down without difficulty, and this is not the only advantage, for, where they are permitted to grow under the impression that they are not doing much harm unless they absolutely interfere with the growth of the crops, they impoverish the land to a far greater extent than any crop in cultivation, and necessitate the labour and expense of much more frequent and heavier applications of manure. Any advancing crop that shows by its want of vigour that the soil is deficient in manurial elements, can always be assisted by manure-water, but it is in the early stages of growth that this has the most effect; for instance, if given to Peas, French Beans, Lettuce, Cabbage, Cauliflowers, or anything of a similar nature before they have more than half arrived at maturity, its effect in increasing the quantity of produce will be much greater than if applied when growth has further advanced, although there is no question that even when thus given in the latter stages it assists development.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

July 16.—Potting Tree Carnations in stiff soil, pressing them in firmly. Potting off seedling Musk plants and Coleus cuttings, and shifting Lælia purpurata. Sowing a row of Mignonette for supplying cut blooms; also another crop of Endive. Planting Cauliflowers and Paris Cos Lettuce. Clipping hedges and cutting Laurels. Pricking dead flowers and leaves off flower beds, and pegging down such plants as require that attention. Thinning Turnips and drawing drills in which to sow Spinach.

July 17.—Potting old winter Carnations and staking them neatly. Shaking out and repotting old plants of Poinsettias. Blocking Epidendrum bicornutum. Pulling up Shallots and laying them in the sun to ripen. Watering Cauliflowers, seed-beds, Radishes, Vegetable Marrows, and Celery. Tying Lettuces. Netting Currant, Cherry, and Gooseberry trees. Plunging Chrysanthemums and Cherry trees in pots out-of-doors.

July 18.—Repotting Lycaste Skinneri, Epidendrum Frederici Gulielmi. Planting a border with Endive. Hoeing among all vegetable crops. Earthing up Savoys. Taking up Strawberry runners. Plunging all Roses in open ground, and placing Azaleas out-of-doors to ripen their wood and clear them of thrips. Storing away Shallots and Garlic on floor of cool loft, and shading Peaches that are ripe, in order to keep them back.

July 19.—Potting Roses in a mixture of loam, manure, bones, charcoal, and sand. Planting May-sown Veitch's Autumn Giant Cauliflowers on land lately cleared of Peas. Leaving the lights of Peach-houses open day and night where the fruit has all been gathered; also giving abundance of air to all Vines where the Grapes have commenced to colour. Nailing in leading shoots of Apricot, Peach, and Plum trees.

July 20.—Potting Strawberry runners; also Coleus and Balsams. Sowing Cucumbers for late crops; also Turnips, Radish, and Chervil. Tying Peach trees, and planting Green Cos, Bath Cos, and Neapolitan Cabbage Lettuces; also late Celery. Putting in cuttings of Hydrangeas, scarlet Pelargoniums, Cytisus, and Coleus. Hoeing among Raspberry plants; also all vegetable crops, and digging land for more Spinach.

July 21.—Potting Mrs. Marshall and Rose of Castile Fuchsias; also Abutilons, Clerodendrons, and Keen's Seedling Strawberries, and repotting young Cyclamens in loam, leaf-soil, and sand, afterwards placing them in a cold pit and shading them until well established. Sowing Batavian and Green-curled Endive, Hill's Incomparable, and Early Market Cabbage; also Cucumbers for winter supply. Digging land in which to plant Wallflowers, and earthing up Cauliflowers and Winter Greens.

Hardy Flowers.

TUBEROUS-ROOTED BEGONIAS.—When planted out in a light rich soil, on a sunny, warm border, these do well, and flower profusely, and their blossoms prove more durable than when the plants are in pots in the heated atmosphere of a greenhouse. It is an interesting process to raise a few of these Begonias from seed. It is easy to get a good strain of seed from any seedsman, and it should be sown in a pan or box of light sandy soil, and then placed in a gentle bottom-heat with a piece of glass over it. As soon as the seedlings are large enough to handle, they should be pricked off into pots and grown on as fast as possible. Tuberous-rooted Begonias make good exhibition plants, but they require to be conveyed with much care to the place of show or they will shed their flowers. It may not be generally known that B. Weltoniensis makes an excellent town plant, growing well and flowering freely in confined places where other plants will fail.

CANTERBURY BELLS.—Some beautiful forms of these have appeared this year, the flowers of which are very large, and in many cases double. They vary in colour from pure white to blush, lilac, pink, rosy-purple, violet, and blue. They rank amongst the most attractive of border flowers, because they bloom so freely and so continuously. Then there is the form known as C. Medium Calycanthema, in which the calyx is coloured and of large size—in the form of a disc. In this section we get white, cream, delicate mauve, and blue flowers. They are very attractive, but one could wish they were a little less lanky in growth. In this respect the new strain of Canterbury Bells decidedly gets the best of it. It is best to sow the seed in March and April, in order to get the plants strong before planting-out time, but some may be sown at once if the plants be pushed on into growth as soon as possible.

ESCHSCHOLTZIA.—The beautiful new forms of this glowing annual, which we have recently seen, are indeed great acquisitions; the rich reddish-orange of Mandarin, and the unique form of the double crocea, are accessions of real value, and with crocea, alba, and the orange aurantiaca, give us a batch of most attractive flowers. What is known as E. rosea is decidedly pretty, but is so apt to revert to the white form from which it sprang. Some jagged-edged sports, named dentata, are really not worth growing, and have become almost lost. Eschscholtzias are very effective when treated as biennials, the seed being sown in well-prepared ground in September to bloom early in spring; the plants get well established, and send their roots readily into the soil during winter, and then bloom with dazzling splendour in May.

PHLOX DRUMMONDI.—Here is what is known as a tender annual, that is, for all practical purposes, a hardy bedding plant, and a most effective one, too; its great requirement is a fine soil into which its roots can make a free growth. I have recently seen a bed the soil in which was made up of loam, manure, leaf-mould, and a quantity of finely-sifted mortar-rubbish. During dry weather the plants were watered freely, and they now cover the bed completely, and are throwing up remarkably fine trusses of flowers, double the size usually seen. This Phlox must be in rich soil to produce fine flowers, and it is a mistake to have it in poor soil; a good mixture of kinds is essential, that is, the bed should contain plants having flowers of varying and, let us add, striking colours. I saw a bed a few days ago in which the prevailing colour was a pale, indistinct lilac, with scarcely a dash of any brightness to break the monotony. Phlox Drummondi is much to be preferred to the Verbena as a bedding plant, and the rich blood-crimson P. grandiflora splendens is most effective. This variety especially should be used for bedding and border purposes.

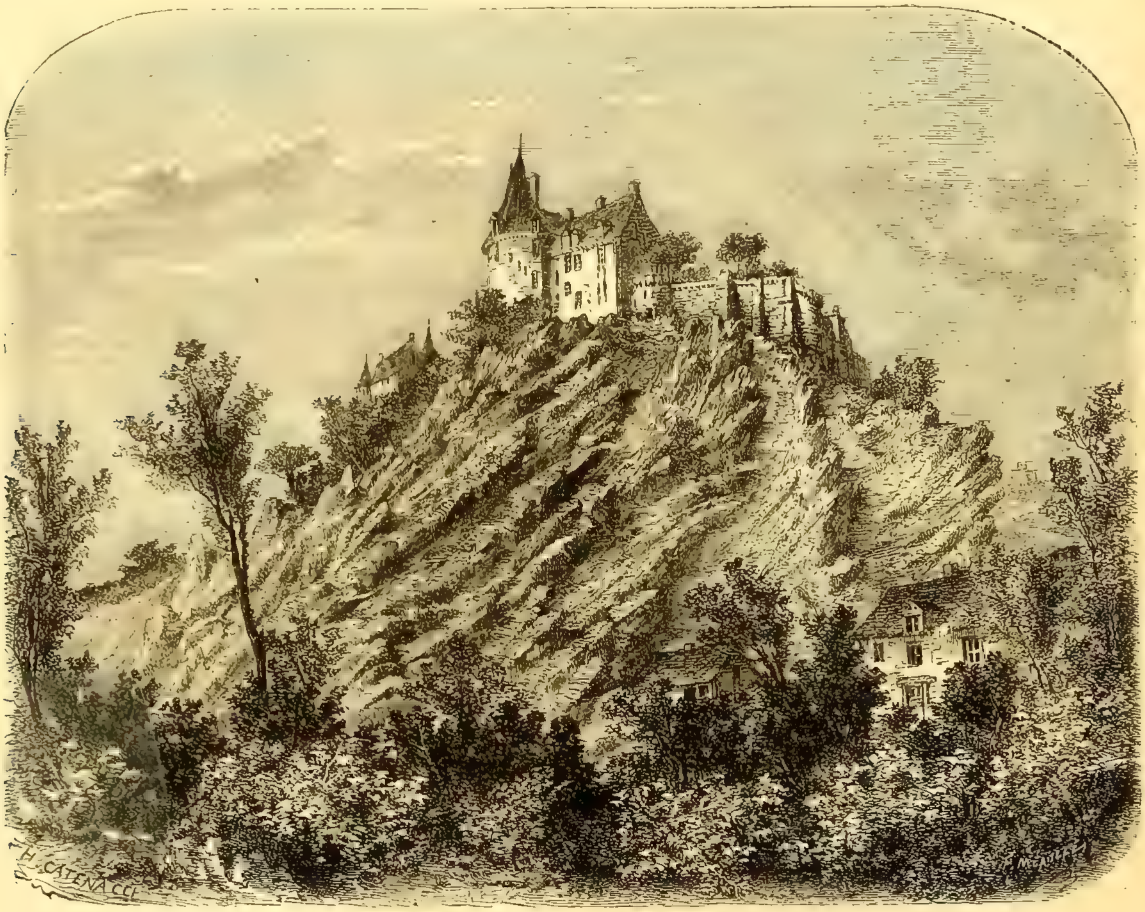
ROSES.—Roses have given amateur gardeners much trouble this season; they did not break into a kindly growth, and the shoots got sadly infested with blight. I have a select few on the seedling Brier, and seeing them thus affected I mulched them with manure and then sprinkled them heavily with hot soapsuds; this was done for two or three weeks, and a great improvement has been the result, a vigorous, clean growth is being followed by fine flowers. The blooms are somewhat late, but they are so fine as to be doubly welcome. Some growers speak of the rich-coloured Louis Van Houtte as a "miffy Rose" and a "delicate grower," but on the seedling Brier and in a stiff loam it grows vigorously, flowers freely, and such flowers, too! large, full, and superbly brilliant.

TULIPS.—A leading grower of these, writing to me a few days ago, said:—"Tulips are taking up beautifully." He meant by that that they were coming up clean and bright, and large and plump. It is best to take them up as soon as they have ripened, that is, when the foliage has quite died down. Growers have drawers prepared with small compartments, and each bulb is put into a compartment with a little fine sandy soil adhering to the roots, and the drawers are put away in a cabinet in a cool place. Those growing choice Tulips should put each sort in a paper bag, and place the bags in a cool, dry place till October, when the bulbs may be looked over, cleansed of the old shell or skin, and will then be ready for planting out again early in November.—D.

Frost in Valleys.—It was thirty-eight years ago that we made and published some marked observations and experiments on the destruction of Peach-buds by frost in warm valleys, and their escape on elevations, which was the result of more rank growth in the rich soil below, greater stillness of the air, and the settling of the colder and heavier air at the bottom. We have frequently recorded the reported observations of others in later years as additional confirmation of this fact. A late number of the "American Farmer" contains a statement, the substance of which is as follows:—A Peach orchard was placed on the slope of a hill, 49 ft. above the Creek Valley, and the crop escaped the frost, which destroyed the fruit below. The past winter being severe, the tops of the highest trees this spring were the only parts that blossomed, and trees on ground 21 ft. higher up escaped, being 70 ft. above the bottom of the valley. In moderate winters, the cold lake of air was shallower or nearer the bottom; in colder winters, it filled the valley to a greater depth. When orchards cover a slope, the exact line of the fatally cold air may be seen on a level along the inclination, varying in height in different years with the varying intensity of the cold of the winter. These observations have been so many times made and repeated, that the principle is now well understood by most fruit-growers throughout the country.—"Country Gentleman."

HILL GARDENS.

We have often, in speaking of terrace gardens, alluded to the kind of position in which they were originally made, and for which they are only really fitted. The accompanying illustration shows the kind of situation referred to, where the small town spread around the chateau or villa, the slopes were occasionally terraced for ornamental as well as useful culture. In such ground and in ground much less disadvantageous no culture at all is possible without the terrace, therefore the walls of ten thousand valleys in Europe are terraced into steps or stairs. In many parts of Italy and in the Maritime Alps, towns may be seen perched on the hills, just as is the castle in the accompanying cut. In such places when men began to form gardens the terrace was necessary, and it was natural that it should be made ornamental in the hands of the wealthy. The rude stone wall of the cultivator soon became in the hands of artist architects the stately terrace, necessary to secure water, soil, and standing ground for flowers and trees, and also for those who tended them. We are convinced that one of the most hideous errors running through the whole practice and history of landscape gardening is the carrying out of the same style and the various modifications of it in the level meadows of Europe and Britain.



Château de St. Suzanne.

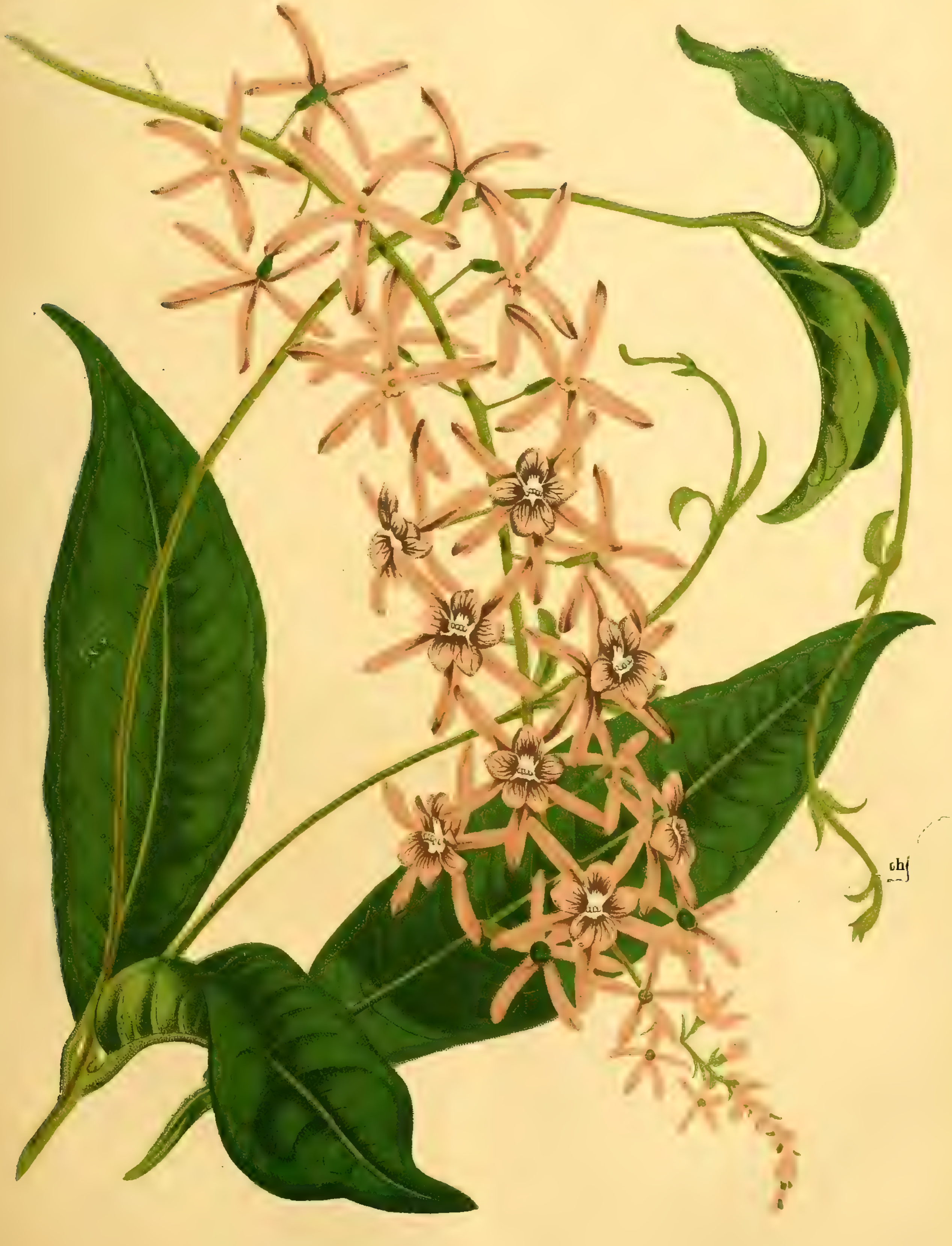
Flowers for Perfuming Tea.—A Chinese "Materia Medica" affords some information regarding the flowers used for perfuming Tea. The principal ones appear to be those of Gardenia radicans, Jasminum Sambac, Aglaia odorata, Ternstræmia japonica, Camellia Sassanqua, and Olea fragrans; those of the last-named shrub being especially esteemed for the purpose. The leaves of Salix alba, and many other species of Willow, are employed in making a kind of Tien-cha, and are said to be openly mixed with the Tea intended for exportation at the Chinese ports.

PLATE LXXXII.

PETRÆA VOLUBILIS.

One amongst the many objects in which The Garden is helpful is in rescuing from unmerited oblivion long-introduced but now little-known plants of sterling merit, and such is the beautiful climber now figured. Although introduced from Vera Cruz more than a century ago, Petræa volubilis is at the present day scarcely known to modern plant growers, and is rarely, if at all, to be met with outside botanical collections. Yet, where even among the glowingly depicted modern introductions, can we find a more worthy subject for the plantsman to take in hand than this, possessing, as it does, wealth of bloom, exquisite delicacy and contrast of colour, and a grace and elegance probably unequalled amongst indoor climbers? The genus Petræa is a very small one, comprising only a very few species, amongst which the one now figured and P. Stapelsiæ are both twining stove shrubs, the stems of each being woody, somewhat rough, and of a brownish colour. The leaves are oblong, blunt, and of a rather hard leathery texture. The flowers are borne in marvellous profusion on elongated light airy thyrses. The calyx of each individual flower is divided into five radiating narrow strap-shaped segments of a very pale mauve, and are almost twice the length of the divisions of the corolla, which is bluish-purple, presenting a pretty and pleasing contrast to the paler tints of the conspicuous calyx. The corolla is rather fugacious, the calyx, on the other hand, being remarkably persistent; consequently, when some of the flowers part company with the latter, they leave behind pale lingering stars, a circumstance which makes the casual observer imagine that the plant pro-

Supplement to *The Garden* [illegible] 37, Southampton Street Covent Garden London W.C.



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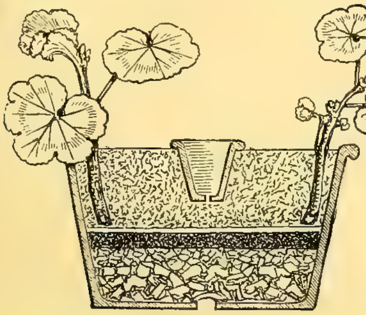
TWINING PETRÆA (P. VOLUBILIS).

duces two distinct kinds of flowers. The appearance of the scattered stars in a cloud of azure is singularly pretty. In the flowers of Petræa we have a colour unique perhaps among stove climbers, and one calculated to afford a pleasing variety in the plant-house and still more so on the exhibition stage. Its most congenial quarter is no doubt a warm conservatory, where, planted out, its roots and stems may have free play. It is not quite so amenable to pot culture; but taken in hand by a skilful plant grower there is little doubt that it could be turned to good account. Be that as it may, however, there is no more beautiful object to be met with in the stove than this, when, in April or early in May, from roof or pillar it throws out in rich profusion its pendent thyrses of starry flowerets. It grows freely in a compost of light fibry loam to which a little sandy peat or heath-mould has been added, with a portion of charcoal, taking care that the drainage is good. Cuttings strike freely in sand, plunged in heat, and covered with a bell-glass. When growing, it likes a moist heat, and should then be watered freely; but during the resting season it should be kept rather dry than otherwise.

Ambrose Balfe.

CUTTING-POTS.

Those, who find their Pelargoniums and other cuttings to suffer from damp, should try the method indicated in the accompanying illustration. The damping off of cuttings usually results from applying water by pouring it on the surface of the soil, and allowing it to percolate through. But if a small pot be sunk in the middle to receive it, moisture will be supplied where it is of most use; the quantity can always be regulated, and the cuttings are not so likely to suffer so much from an occasional overdose as they otherwise would. The best pots for Pelargonium cuttings are those whose width exceeds their height. The section, which is taken vertically through the middle of the pot, shows the cuttings, two only of which appear; the mould in which they are planted should contain plenty of silver sand, a thin layer of that material resting on a layer of Cocoa-nut fibre, and below that a quantity of corks or washed cinders to ensure perfect drainage.



Section of a pot containing Pelargonium Cuttings.

B. S.

SHADING, DAMPING, AND AIRING.

These are as ticklish duties as can devolve upon any one in charge of hothouses, and this season, so far, has probably been as trying to the patience of cultivators as any they can remember. The long spells of dull weather which we have experienced have told upon the well-being of the inmates of both plant and fruit houses. Throughout the whole of the spring the weather was cold, with a constantly overcast sky, which prevented free ventilation; and the foliage of Vines and other subjects has a pale flabby look, which does not bode well for the successful finishing of the crops. Peaches, as a rule, always flag and droop considerably under such circumstances; but they never scorch, and they recover when shut up in the afternoon with a little moisture, and in a few days are sufficiently hardened to be out of danger; but Vines, and particularly the woody-leaved sorts, do not escape so easily, and with the greatest care they are usually singed more or less. It is not so much the bright sunshine which does the mischief as the freer circulation of dry air that one is necessarily compelled to admit in order to keep down high temperatures. Forethought in such cases is necessary; and the great point is to reduce the necessity of giving so much air by checking the fires early in the morning, and in damping the floors and paths frequently during the day. Vapour has a great capacity for heat, which it kills, or neutralises, so to speak, and by raising a vapour under and about the trees in hot days the atmosphere is cooled while the air is moistened, thus lessening the evaporation from the foliage in two ways, and preventing injury. But the syringe is too slow an implement for damping at such times. A good-sized pitcher with a large and free-running rose, should be used and all inside surfaces should be sprinkled before the thermometer indicates a rise, and then the ventilation should afterwards be regulated. If these precautions be attended to in good time, it is rare that much injury is done by scorching, though the plants may droop for a few days. Such precautions are more necessary in the case of Vineries and other fruit-houses, because it is seldom that provision is made for shading them; nor is it advisable to shade fruit trees under glass. I never use shades, nor afford opportunities for their being used, as they are apt to be employed on any occasion as a mere convenience; and frequent shading is as bad as a dull sky, and simply aggravates the evil it is intended to prevent. With many kinds of plants it is quite different, and a word of caution is particularly necessary in the case of Camellias, which cannot stand bright sunshine under glass at any time, let alone after dull weather; but they do not object to plenty of subdued light. In their case the danger is that those in charge will not use the shading in time, and a few minutes' neglect will sometimes half ruin a collection of Camellia plants. The safest plan is to paint the glass on the outside with whiting mixed with a little turpentine or milk, or anything else to make it stick, but it should be put on as thinly as possible; the merest streak of the brush will break the sun's rays, and that is quite enough. Such adhesive mixtures come off easily in autumn if the glass be first wetted with a strong solution of soft soap. In the case of plant-houses containing subjects that need shade—such as Ferns, Caladiums, Orchids, &c., placed perhaps with others that require most light—a compromise must be made by using a movable shading that can be rolled up and down as occasion requires. All that our shade-loving plants object to is fierce sunlight, which some other subjects often necessarily occupying the same house enjoy; but the latter will not suffer from being shaded during the hottest part of the day, while the former will be saved. The shading should not remain on the roof a moment longer than is necessary, however. In span-roofed houses, exposing one side of the roof to the east, and the other to the west, the shading should be let down on the respective sides before the sun gathers power, and pulled up again when its influence is on the wane in the afternoon: there is never so much danger after the house has been damped down, even though the sun is shining upon it. Lean-to houses, which receive the direct rays when they are most powerful, require more watching; and the most dangerous period of the day is between ten o'clock in the morning and four in the afternoon, and between these hours the shading should be done on hot days. Connected with the subject of airing must be mentioned that peculiar accumulation of moisture which gathers upon the leaves during the night under certain conditions, and which is most frequently noticeable in the case of Vines, the leaves of which are often laden with dewdrops in the morning. As a rule, this is a welcome sign, for it is often associated with good health, and shows the Vines to be gorged to repletion, and that the night temperature is not too high. Vines and other plants will show dewdrops in this way when the house is shut up after a fine day and left all night without fire-heat. There is danger, however, at such time; for, unless air be given early in the morning to dissipate the moisture, scorching of the leaves and scalding of the berries will occur, through the rapid evaporation produced by the sudden and free admission of air, should the morning prove bright. A chink of air left on all night, and a slight increase by six or seven o'clock in the morning will generally prevent any mischief.

Chef.

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 18).

Pumpion.

Mrs. Ford. Go to, then. We'll use this unwholesome humidity—this gross watery Pumpion.

Merry Wives of Windsor, act iii., sc. 3.

Pumpion, Pompion, and Pumpkin were general terms including all the Cucurbitaceæ, such as Melons, Gourds, Cucumbers, and Vegetable Marrows. All were largely grown in Shakespeare's days, but I should think the reference here must be to one of the large useless Gourds, for Mrs. Ford's comparison is to Falstaff, and Gourds were grown large enough to bear out even that comparison. "The Gourd groweth into any forme or fashion you would have it . . . . being suffered to clime upon an arbour where the fruit may hang; it hath beene seene to be nine foot long." And the little value placed upon the whole tribe helped to bear out the comparison. They were chiefly good to "cure copper faces, red and shining fierce noses (as red as red Roses), with pimples, pumples, rubies, and such-like precious faces." This was Gerarde's account of the Cucumber, while of the Cucumber Pompion, which was evidently our Vegetable Marrow, and of which he has described and figured the variety which we now call the Custard Marrow, he says, "it maketh a man apt and ready to fall into the disease called the cholericke passion, and of some the felonie."

Mrs. Ford's comparison of a big, loutish man to an overgrown Gourd has not been lost in the English language, for "bumpkin" is only another form of "Pumpkin," and Mr. Fox Talbot, in his "English Etymologies," has a very curious account of the antiquity of the nickname. "The Greeks," he says, "called a very weak and soft-headed person a Pumpion, whence the proverb *πεπονος μαλακωτερος*, softer than a Pumpion; and even one of Homer's heroes, incensed at the timidity of his soldiers, exclaims *ω πεπονες*, you Pumpions! So also *cornichon* (Cucumber) is a term of derision in French."

Yet the Pumpion or Gourd had its uses, moral uses. Modern critics have decided that Jonah's Gourd, "which came up in a night and perished in a night," was not a Gourd, but the Palma Christi, or Castor-oil tree. But our forefathers called it a Gourd, and believing that it was so they used the Gourd to point many a moral and illustrate many a religious emblem. Thus viewed it was the standing emblem of the rapid growth and quick decay of evil-doers and their evil deeds. "Cito nata, cito pereunt," was the history of the evil deeds, while the doers of them could only say—

> Quasi solstitialis herba fui,
> Repente exortus sum, repente occidi.
>
> *Plautus.*

Quince.

Nurse. They called for Dates and Quinces in the pastry.

Romeo and Juliet, act iv., sc. 4.

Quince is also the name of one of the "homespun actors" in "Midsummer Night's Dream," and is no doubt there used as a ludicrous name. The name was anciently spelt "coynes."

> And many homly trees ther were
> That Peches, Coynes, and Apples beere,
> Medlers, Plowmes, Perys, Chesteyns,
> Cherys, of which many oon fayne is.
>
> *Chaucer* ("Romaunt of the Rose").

The same name occurs in the old English vocabularies, as in a nominale of the fifteenth century, "hæc cocianus, a coven-tre;" in an English vocabulary of the fourteenth century, "Hoc coccinum, a quoyne," and in the treatise of Walter de Biblesworth, in the thirteenth century—

> Issi troverez en ce verger
> Estang un sek Coigner (a Coyn-tre, Quince-tre).

And there is little doubt that "Quince" is a corruption of "coynes," which again is a corruption, not difficult to trace, of Cydonia, one of the most ancient cities of Crete, where the Quince tree is indigenous, and whence it derived its name of Pyrus Cydonia, or simply Cydonia. If not indigenous elsewhere, in the East it was very soon cultivated, and especially in Palestine. It is not yet a settled point, and probably never will be, but there is a strong consensus of most of the best commentators, that the *Tappuach* of Scripture, always translated Apple, was the Quince. It is supposed to be the fruit alluded to in the Canticles, "As the Apple tree among the trees of the wood, so is my beloved among the sons; I sat down under his shadow with great delight, and his fruit was sweet to my taste;" and in Proverbs, "A word fitly spoken is like Apples of gold in pictures of silver;" and to have given its name to various places in Palestine, as Tappuach, Beth-Tappuach, and Aen-Tappuach.

By the Greeks and Romans the Quince was held in honour as the fruit especially sacred to Venus, who is often represented as holding a Quince in her right hand, the gift which she received from Paris. In other sculptures "the amorous deities pull Quinces in gardens and play with them. For persons to send Quinces in presents, to throw them at each other, to eat them together, were all tokens of love; to dream of Quinces was a sign of successful love" (Rosemmaller). The custom was handed down to mediæval times. It was at a wedding feast that "they called for Dates and Quinces in the pastry;" and Brand quotes a curious passage from the "Praise of Musicke," 1586 ("Romeo and Juliet" was published in 1596):—"I come to marriages, wherein as our ancestors did fondly, and with a kind of doting, maintaine many rites and ceremonies, some whereof were either shadowes or abodements of a pleasant life to come, as the eating of a Quince Peare to be a preparative of sweet and delightful dayes between the maried persons."

To understand this high repute in which the Quince was held, we must remember that the Quince of hot countries differs somewhat from the English Quince. With us the fruit is of a fine, handsome shape, and of a rich golden colour when fully ripe, and of a strong scent, which is very agreeable to many, though too heavy and overpowering to others. But the rind is rough and woolly, and the flesh is harsh and unpalatable, and only fit to be eaten when cooked. In hotter countries the woolly rind is said to disappear, and the fruit can be eaten raw; and this is the case not only in Eastern countries, but also in the parts of Tropical America to which the tree has been introduced from Europe.

In England the Quince is probably less grown now than it was in Shakespeare's time—yet it may well be grown as an ornamental shrub even by those who do not appreciate its fruit. It forms a thick bush, with large white flowers, followed in the autumn by its handsome fruit, and requires no care. "They love shadowy, moist places"—"It delighteth to grow on plaine and even ground and somewhat moist withall." This was Lyte's and Gerarde's experience, and I have never seen handsomer bushes or finer fruit than I once saw on some neglected bushes that skirted a horsepond on a farm in Kent; the trees were evidently revelling in their state of moisture and neglect. The tree has a horticultural value as giving an excellent stock for Pear-trees, on which it has a very remarkable effect, for "Cabanis asserts that when certain Pears are grafted on the Quince, their seeds yield more varieties than do the seeds of the same variety of Pear when grafted on the wild Pear" (Darwin). Its economic value is considered to be but small, being chiefly used for Marmalade, but in Parkinson's time it was in higher repute, for "there is no fruit growing in the land," he says, "that is of so many excellent uses as this, serving as well to make many dishes of meat for the table, as for banquets, and much more for their physical virtues, whereof to write at large is neither convenient for me nor for this work."

Radish.

(1) *Falstaff.* When he was naked, he was for all the world like a forked Radish.

2nd Henry IV., act iii., sc. 2.

(2) *Falstaff.* If I fought not with fifty of them, I'm a bunch of Radish.

1st Henry IV., act ii., sc. 4.

There can be no doubt that the Radish was so named because it was considered by the Romans, for some reason unknown to us, *the* root par excellence. It was used by them, as by us, "as a stimulus before meat, giving an appetite thereunto"—

> "acria circum
> Rapula, lactucæ, radices, qualia lassum
> Pervellunt stomachum."—*Horace.*

but it was cultivated, or allowed to grow, to a much larger size than we now think desirable. Pliny speaks of Radishes weighing 40 lb. each, and others speak even of 60 lb. and 100 lb. But in Shakespeare's time the Radish was very much what it is now, a pleasant salad vegetable, but of no great value. We read, however, of Radishes being put to strange uses. Lupton, a writer of Shakespeare's day, says: "If you would kill snakes and adders strike them with a large Radish—and to handle adders and snakes without harm, wash your hands in the juice of Radishes and you may do without harm."—"Notable Things," 1586.

We read also of great attempts being made to procure oil from the seed, but to no great effect. Hakluyt, in describing the sufficiency of the English soil to produce everything necessary in the manufacture of cloth, says—"So as there wanteth, if colours might be brought in and made naturall, but onely oile; the want whereof if any man could devise to supply at the full with anything that might become naturall in this realme, he, whatsoever he were that might bring it about, might deserve immortal fame in this our Commonwealth, and such a devise was offered to Parliament and refused, because they denied to allow him a certain liberty, some others having obtained the same before that practised to work that effect by Radish seed, which onely made a trial of small quantity, and that went no further to make that oile in plenty, and now he that offered this devise was a merchant, and is dead, and withal the devise is dead with him."—"Voiages," vol. 2.

The Radish is not a native of Britain, but was probably introduced by the Romans, and was well known to the Anglo-Saxon gardener under its present name, but with a closer approach to the Latin, being called Rædic.

A curious testimony to the former high reputation of the Radish survives in the "Annual Radish Feast at Levens Hall," a custom dating from time immemorial, and supposed by some to be a relic of feudal times, held on May 12th at Levens Hall, the seat of the Hon. Mrs. Howard, and adjoining the high road about midway between Kendal and Milnthorpe. Tradition hath it that the Radish feast arose out of a rivalry between the families of Levens Hall and Dallam Tower, as to which should entertain the Corporation with their friends and followers, and in which Levens Hall eventually carried the palm. The feast is provided on the bowling green in front of the Hall, where several long tables are plentifully spread with Radishes and brown bread and butter, the tables being repeatedly furnished with guests.—"Gardeners' Chronicle."

Raisins.

Clown. Four pounds of Prunes and as many Raisins of the sun.
Winter's Tale, act iv., sc. 2.

Bearing in mind that Raisin is a corruption of *racemus*, a bunch of Grapes, we can understand that the word was not always applied, as it is now, to the dried fruit, but was sometimes applied to the bunch of Grapes as it hung ripe on the tree. So Chaucer uses it:—

For no man at the firste stroke
He may not felle down an Oke;
Nor of the Reisins have the wyne
Till Grapes be ripe and welle afyne.
Romaunt of the Rose.

The dried fruit were Raisins of the sun, *i.e.*, dried in the sun, to distinguish them from those which were dried in ovens. They were, of course, foreign fruit, and were largely imported. The process of drying in the sun is still the method in use, at least, with "the finer kinds, such as Muscatels, which are distinguished as much by the mode of drying as by the variety and soil in which they are grown, the finest being dried on the Vines before gathering, the stalk being partly cut through when the fruits are ripe, and the leaves being removed from near the clusters, so as to allow the full effect of the sun in ripening."

The Grape thus becomes a Raisin, but it is still further transformed when it reaches the cook; it then becomes a Plum, for Plum pudding has, as we all know, Raisins for its chief ingredient and certainly no Plums; and the Christmas pie into which Jack Horner put in his thumb and pulled out a Plum must have been a mince-pie, also made of Raisins; but how a cooked Raisin came to be called a Plum is not recorded. In Devonshire it undergoes a further transformation, for there Raisins are called Figs, and a Plum pudding is called a Fig pudding.

Reeds.

(1) *2nd Servant.* I had as lief have a Reed that will do me no service, as a partisan I could not heave.
Antony and Cleopatra, act ii., sc. 7.

(2) *Arviragus.* Fear no more the frown o' the great,
Thou art past the tyrant's stroke;
Care no more to clothe and eat,
To thee the Reed is as the Oak;
The sceptre, learning, physick, must
All follow this and come to dust.
Cymbeline, act iv., sc. 2.

(3) *Ariel.* His tears run down his beard like winter's drops
From eaves of Reeds.
Tempest, act v., sc. 1.

(4) *Ariel.* With hair up-staring—then like Reeds, not hair—
Ibid., act i., sc. 2.

(5) *Hotspur.* Swift Severn's flood,
Who then, affrighted with their bloody looks,
Ran fearfully among the trembling Reeds.
1st Henry IV., act i., sc. 3.

(6) *Portia.* And speak between the change of man and boy
With a Reed voice.
Merchant of Venice, act iii., sc. 4.

Reed is a general term of almost any water-loving, grassy plant, and so it is used by Shakespeare. In the Bible it is perhaps possible to identify some of the Reeds mentioned with the Sugar Cane in some places, with the Papyrus in others, and with the Arundo Donax. As a Biblical plant it has a special interest, not only as giving the emblem of the tenderest mercy that will be careful even of "the bruised Reed," but also as entering largely into the mockery of the Crucifixion. "They put a Reed in His right hand," and "they filled a sponge full of vinegar, and put it upon a Reed and gave Him to drink." The Reed in these passages was probably the Arundo Donax, a very elegant Reed, which was used for many purposes in Palestine, and is a most graceful plant for English gardens, being perfectly hardy, and growing every year from 12 ft. to 14 ft. in height, but very seldom flowering.

But in Shakespeare, as in most writers, the Reed is simply the emblem of weakness, tossed about by and bending to a superior force, and of little or no use—"a Reed that will do me no service" (No. 1). It is also the emblem of the blessedness of submission, and of the power that lies in humility to outlast its oppressor.

Like as in tempest great,
Where wind doth bear the stroke,
Much safer stands the bowing Reed
Than doth the stubborn Oak.

Shakespeare mentions two uses to which the Reed was applied, the thatching of houses (No. 3), and the making of Pan or shepherd's pipes (No. 6). Nor has he anything to say of its beauty, yet the Reeds of our riversides (Arundo Phragmites) are most graceful plants, especially when they have their dark plumes of flowers, and this Milton seems to have felt—

Forth flourish't thick the clustering Vine, forth crept
The smelling Gourd, up stood the Cornie Reed,
Embattled in her field.
Paradise Lost, book vii.

Rhubarb.

Macbeth. What Rhubarb, Senna, or what purgative drug
Would scour these English hence?
Macbeth, act v., sc. 3.

Shakespeare could only have known the imported drug, for the Rheum was first imported by Parkinson, though it had been described in an uncertain way both by Lyte and Gerarde. Lyte said—"Rha, as it is thought, hath great broade leaves;" and then he says—"We have found here in the gardens of certaine diligent herboristes that strange plant which is thought by some to be Rha or Rhabarbum;" but from the figure it is very certain that the plant was not a Rheum. After the time of Parkinson, it was largely grown for the sake of producing the drug, though it is still doubtful whether any of the species now grown in England are the true species that have so long produced Turkey Rhubarb.* The plant is now grown most extensively as a spring vegetable, though I cannot find when it first began to be so used. Parkinson evidently tried it and thought well of it. "The leaves have a fine acid taste; a syrup, therefore, made with the juice and sugar cannot but be very effectual in dejected appetites." Yet even in 1807 Professor Martyn, the editor of "Millar's Dictionary," in a long article on the Rhubarb, makes no mention of its culinary qualities, but in 1822 Phillips speaks of it as largely cultivated for spring tarts, and forced for the London markets, "medical men recommending it as one of the most cooling and wholesome tarts sent to table."

As a garden plant the Rhubarb is highly ornamental, though it is seldom seen out of the kitchen garden, but where room can be given to it, Rheum palmatum will always be admired as one of the handsomest of foliage plants. The finest species of the family is the Himalayan Rheum nobile, but it is exceedingly difficult to grow. Botanically the Rhubarb is allied to the Dock and Sorrel, and all the species are herbaceous.

Rice.

> *Clown.* Let me see. What am I to buy for our sheep-shearing feast? Three pound of sugar, five pound of Currants, Rice. What will this sister of mine do with Rice?
>
> *Winter's Tale*, act iv., sc. 2.

Shakespeare may have had no more acquaintance with Rice than his knowledge of the imported grain, which seems to have been long ago introduced into England, for in a nominale of the fifteenth century, we have "Hoc risi, indeclinabile, ryse." Yet he may have seen the plant, for Gerarde grew it in his London garden, though "the floure did not show itselfe by reason of the injurie of our unseasonable yeare 1596." It is a native of Africa, and was soon transferred to Europe as a nourishing and wholesome grain, especially for invalids—"sume hoc ptisanarium oryzæ," says the doctor to his patient in Horace. It has been occasionally grown in England as a curiosity, but seldom comes to any degree of perfection out-of-doors, as it requires a mixture of moisture and heat that we cannot easily give it. There are said to be species in the north of China growing in dry places, which would perhaps be hardy in England and easier of cultivation, but I am not aware that they have ever been introduced.

H. N. Ellacombe.

(To be continued).

Effects of the Winter of 1860-61 on Shrubs at Penrose.—August, 1860, was cloudy and wet (21 days' rain), and summer shoots of shrubs were not ripened properly. Winter began early, and half-hardy shrubs, whose young branches were still full of sap, suffered severely in Cornwall, whilst the same kinds survived the winter in the suburbs of London.

Shrubs killed at Penrose.

Abutilon vitifolium (some).
Acacia lophantha (all).
Araucaria brasiliana (all).
Arundo Donax.
Benthamia fragifera (some).
Cineraria arborea.
Cedrus Deodara (some).
Daphne purpurea.
Juniperus flaccida.
Mesembryanthemums (all).
Olive.
Paulownia imperialis (all but one).
Physianthus albiflorus.
Piptanthus.
Pittosporum.
Thuja Donneyana.
Veronica picta (all).

Died back, but recovered since.

Acacia dealbata.
Deciduous Cypress.

Humea.
Rosa Macartneyana.
Viburnum suspensum.

Injured.

Azalea (various).
Benthamia fragifera (all, and some killed).
Cedrus Deodara.
Hydrangea.
Hydrangea japonica.
Liquidambar.
Rhododendrons (some).

Uninjured.

Araucaria imbricata (all).
Camellia japonica.
Juniperus (various, except flaccida).
Phygelia capensis.
Pomegranate.
Rhododendron ponticum.
Thuja nepalensis.

Injury to trees was not generally registered, but Pinus austriaca suffered much more than Pinaster. Pinus insignis suffered from snow.—John Jope Rogers.

HARDY FLOWERS IN LONDON GARDENS.

The rains which we have lately had have greatly altered the appearance of gardens in and around London for the better, and some plants have become wonderfully improved; but no amount of fine weather can wholly obliterate the effects of the disastrous easterly winds and frosts experienced late in the spring. Lilies have suffered severely, especially the south European red Lilies, Humboldti, Washingtonianum, superbum, canadense, and the early flowering forms of colchicum. The later-flowering ones look well, and from them we may safely expect a good display. The finest Lily at present in flower is L. Szovitzianum, which is one of the best of all Lilies; it grows from 4 ft. to 5 ft. in height, and bears from four to ten sweet-scented flowers on a stem, the colours varying from creamy-white to deep golden yellow; of these there are some thousands in flower in the north of London. L. elegans and its numerous varieties also afford a blaze of colour just now, some kinds having from three to five large flowers on stems not more than 6 in. above the ground. L. tenuifolium, also in flower, is vivid scarlet; and L. philadelphicum, on a warm sunny border, is likewise in fine condition, as is also L. Washingtonianum and its purple variety. Most of the Californian section, indeed, will prove grand additions to our list of hardy plants, as they appear to grow almost anywhere, and they are not injured in the slightest by the late spring. L. canadense, which is very showy, varies considerably in colour; the most beautiful is the Californian variety called parvum. L. longiflorum and L. Browni are just opening; L. excelsum and L. candidum and its varieties are also

Gilia liniflora.

Godetia rubicunda.

Lilium Szovitzianum.

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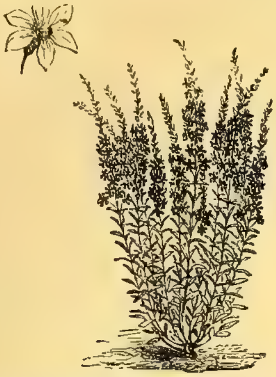
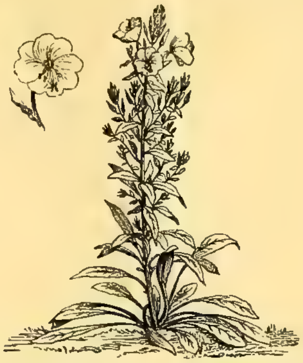
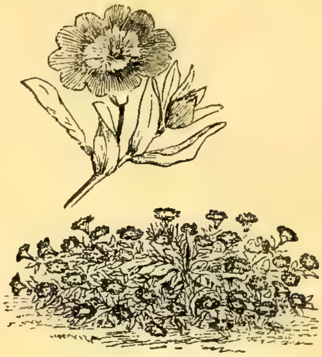
* When writing the above, I was not aware that the Rheum officinale, and other species, are largely grown in England solely for their medical uses, and that very good Rhubarb is produced. But in The Garden for July 7, I find a very interesting account of the growth of Rhubarb by Mr. Usher, near Banbury.—H. N. E.



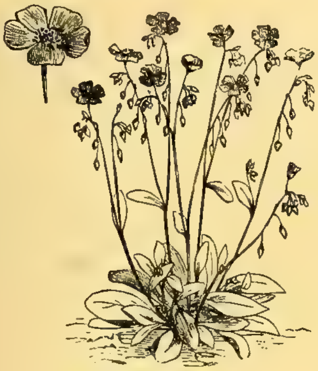
Slender Loosestrife (Lythrum virgatum).



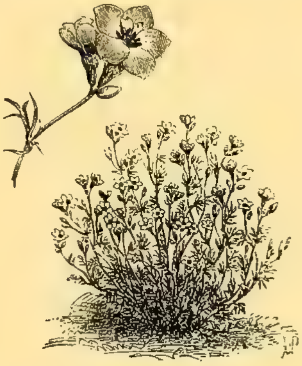
Large Evening Primrose (Œnothera grandiflora).



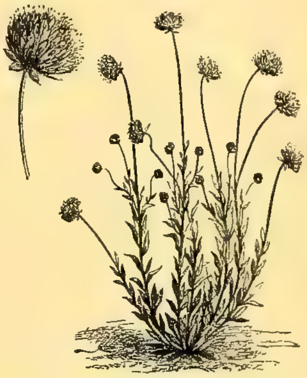
Nolana atriplicifolia.



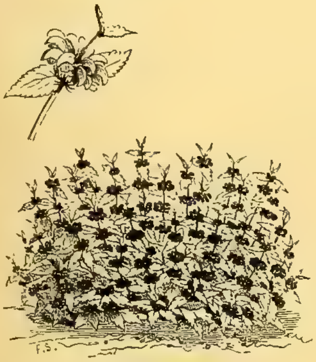
Calandrinia discolor.



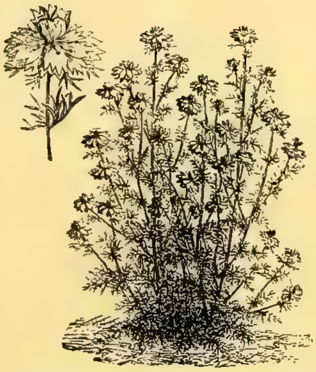
Gilia tricolor.



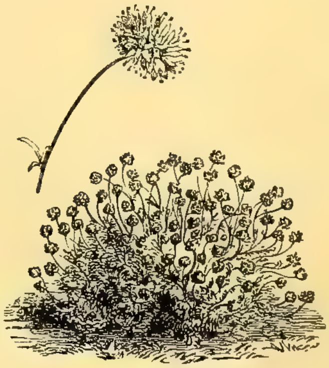
Mountain Sheep Scabious (Jasione montana).



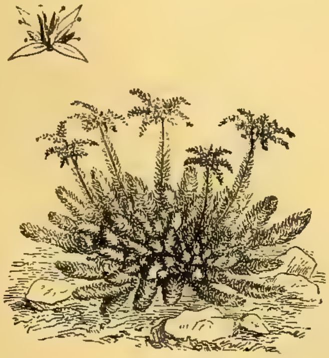
Phlomis Herba-venti.



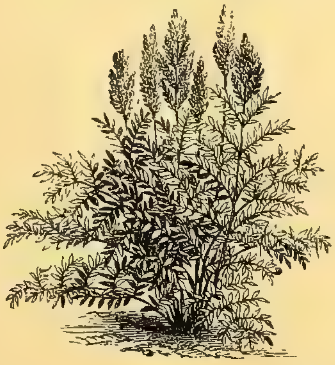
Devil-in-a-bush (Nigella damascena).



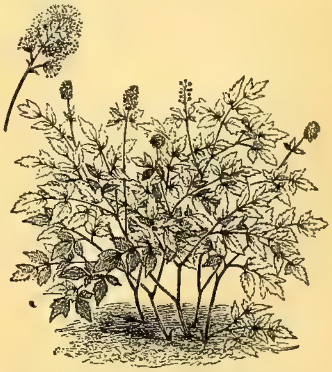
Gilia laciniata.



Bird's-foot Stonecrop (Sedum pulchellum).



Royal Fern (Osmunda regalis, var.).



Common Baneberry (Actæa spicata).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

coming finely into flower. Of Martagons, the most beautiful is the white, and all the varieties of bulbiferum and croceum are likewise pretty. These constitute the best of this family now in bloom. English Irises still form an attractive group, and some of the late-flowering Ixias, especially I. longiflora, are in perfection in some of the London establishments. Brodiæa coccinea, a perfect gem, should be grown by every one; it has been in flower a month and is now as fresh as ever. B. grandiflora, congesta, and capitata, are likewise pretty, and the curious climbing B. volubilis is worthy the attention of all lovers of hardy plants. Alstrœmerias are just in perfection, as are also some of the Bomareas; B. oculata, a handsome climbing plant, has dark olive-green foliage and numerous heads of deep crimson flowers. Triteleia laxa, and Allium acuminatum, are at their best; both are perfectly hardy and exceedingly ornamental. Tropæolum polyphyllum is now a mass of golden-yellow—a lovely plant, and yet almost unknown; it succeeds in nearly any position, is easily propagated, quite hardy, and attractive from the moment it starts growing in spring until it has done flowering. Sparaxis pulcherrima is still showy, although now past its best. Amaryllis longifolia and the white variety are very conspicuous: their stately heads of long, tubular flowers entitle them to a place in every garden. Freesia odorata, and the variety Leichtlini, are just expanding in the open ground, but they are better adapted for pot culture indoors; as pot plants (six in a 5-in. pot) they are superb. In the bulb grounds there are at least thirty varieties of Gladioli now in full bloom, principally varieties of G. ramosus, trimaculatus, Colvilli, and sagittalis; among the best may be mentioned G. Colvilli var. The Bride, pure white, a most useful plant for cutting from; Queen Victoria, Princess Mathilde, insignis, Lavinia, Little Beauty, emicans, and Rosa mundi, are also beautiful and invaluable in a cut state. They will grow in any moderately light soil, and may be allowed to remain undisturbed for years. Among perennials, Cypripedium spectabile is now in perfection, some of the strongest plants bearing three and even four flowers. For this Lady's-slipper Orchis foliosa makes a good companion, both growing freely in peaty soil in a quiet shady nook. Phlox ovata makes a fine deep rose-coloured border plant about 1 ft. or so high. Onosma tauricum (deep yellow) and O. echioides (creamy white and very fragrant) are also two good plants for the front row of a herbaceous border. Symphyandra Wanneri, a charming little Alpine closely allied to the Campanula, forms a pyramid of purple flowers; Lysimachia lupinoides, a Japanese species, I believe, and probably not very hardy, bears abundance of white flowers; and among the Campanulas the most noteworthy are the varieties of C. turbinata, pusilla, pumila, garganica, muralis, carpatica, lactiflora, and numerous forms of the old Peach-leaved Bell-flower C. persicifolia. Actæa racemosa is a stout-growing border plant which bears drooping spikes of white flowers. Spiræa Aruncus, when furnished with feathery plumes of white flowers, is a good plant for the margins of shrubbery borders. Wyethia amazonica is a showy Californian Composite, which bears bright yellow flowers 4 in. in diameter; and Linum viscosum is one of the best perennial Flaxes, and is easily grown. The Cape Forget-me-not (Anchusa capensis) although not hardy is well worth growing, treated as an annual; its flowers are deep gentian blue, and they last until late in the autumn; Edraianthus dalmaticus, with numerous purple flowers and a dwarf prostrate habit, is at present very attractive; and Sedum pulchellum, one of the most beautiful of the Stonecrops, is very floriferous on rock-work, the flowers being of a light rose colour. A. P.

The Australian Pitbury.—Baron Mueller has given, in an Australian medical journal, an account of his examination of the leaves of the Pitbury, said to be of marvellous power as a stimulant, and to be found growing in desert scrubs from the Darling River and Barcoo to West Australia. He is of opinion that it is derived from the Duboisia Hopwoodii, described by him in 1861, the leaves of which are chewed by the natives of Central Australia to invigorate themselves during long foot journeys through deserts. The blacks, he says, use the Duboisia to excite their courage in warfare; a large dose infuriates them. The "Sydney Herald" is informed also that some dry leaves and small stems, said to come from far beyond the Barcoo country, and called "pitcherine," are used by the aboriginals as we use Tobacco, for both chewing and smoking. and it is stated that a small quantity causes agreeable exhilaration, prolonged use resulting in intense excitement.

HISTORY OF THE JERUSALEM ARTICHOKE.

By J. H. Trumbull and Asa Gray.

Linnæus, in "Species Plantarum," gave to the Jerusalem Artichoke (Helianthus tuberosus) the habitat in Brasilia. In his earlier "Hortus Cliffortianus" the habitat assigned was Canada. M. Alphorse De Candolle, in his "Géographie Botanique," ii., 824 (1855), refers to this as "decidedly an error, at least as to Canada properly so called," assigns good reasons for the opinion that it did not come from Brazil, nor from Peru (to which the name under which it appeared in cultivation in the Farnese garden seemed to refer), but in all probability from Mexico or the United States. He adds that Humboldt did not meet with it in any of the Spanish colonies. About this time I received from my friend and correspondent, the late Dr. Short, of Kentucky, some long and narrow tubers of Helianthus doronicoides, with the statement that he and some of the neighbours found them good food for hogs, and, if I rightly remember, had planted them for that purpose. They were planted in the Cambridge Botanic Garden; after two or three years it was found that some of the tubers produced were thicker and shorter; some of these were cooked along with Jerusalem Artichokes, and found to resemble them in flavour, although coarser. Consequently, in the second edition of my "Manual of the Botany of the Northern United States" (1856), it is stated that H. doronicoides is most probably the original of H. tuberosus. This opinion was strengthened year after year by the behaviour of the tubers, and by the close similarity of the herbage and flowers of the two plants, as they grew side by side; indeed, as the two patches were allowed to run together in a waste or neglected place, they have become in a measure confounded. Wishing to obtain an unmixed stock, I applied last autumn to Prof. J. M. Coulter, of Hanover, Indiana, and received from him a good number of tubers from wild plants of the neighbourhood, which will now be grown. Some of these were slender, some thicker and shorter, and a few were to all appearance identical with Jerusalem Artichokes. If they were really all from one stock, as there is reason to believe, the question of the origin of Helianthus tuberosus is well-nigh settled. We were now interested to know whether our Indians—at least those of the Mississippi Valley, where H. doronicoides belongs—were known to cultivate these tubers or to use them for food. Recently a note in the "American Agriculturist" called attention to a sentence in Dr. Palfrey's History of New England, i., 27, stating that the Indians of that region raised, among other articles of food, "a species of Sunflower, whose esculent tuberous root resembled the Artichoke in taste." The venerable historian found himself at the moment unable to refer me to the sources of this statement; but, as it was now certain that some record of the kind existed, I applied to Mr. Trumbull, who obligingly and promptly supplied the information required, and placed it at my disposal in the following letter:—

Hartford, Conn., March 26, 1877.

My dear Prof. Gray:—I cannot refer you to the authority for Dr. Palfrey's statement that the Indians of New England cultivated "a species of Sunflower whose esculent tuberous root resembled the Artichoke in taste," but there can be, I think, little doubt of the fact. The historical evidence that "artischoki sub terrâ" were cultivated in Canada and in some parts of New England before the coming of Europeans, is tolerably clear. The only question, if there be any, is as to species, and this does not appear to have been raised for more than half a century after the Jerusalem Artichoke was known to English and Continental botanists. I can discover no authority whatever, before 1700, for ascribing to the Helianthus tuberosus either a Brazilian or a Mexican origin, except—and the exception is unimportant—in C. Bauhin's identification (in his "Pinax," 277) with Helianthemum indicum tuberosum (H. tuberosus), of a plant that he had described in his earlier "Prodomus" (ed. 1671, p. 70) as Chrysanthemon latifolium Brasilianum, from a dry specimen sent to him "eo nomine" from the garden of Contarini. The first trace I find of this species in Europe, is in the second part (cap. 6) of Fabio Colonna's "Ecphrasis minus cognitarum stirpium," published at Rome in 1616. He described it from a plant growing in the garden of Cardinal Farnese. The Sunflower was already well known to European botanists, and had been described and figured by Dodoens (1563) and Lobel (1576) as Chrysanthemum peruvianum and Flos solis peruvianus. With reference to these descriptions, probably Colonna gave the new species the name of Aster peruanus tuberosâ radice, otherwise Solis flos Farnesianus. (He gave a more particular description of the plant in his annotations to Recchi's Hernandez, Plant. Mexic. Hist., 1651, pp. 878, 881, as Peruanus Solis flos ex Indiis tuberosus). The author of the "Descriptio variorum plantarum, in Horto Farnesiano," published under the name of Tobias Aldinus (Rome, 1625), gave some account of the roots, which he calls Tubera indica, of the "Solis Flos tuberosus, seu Flos Farnesianus Fabii Columnæ" (p. 91). It may be observed that several of the rarer plants in the Farnese garden at this time were from Canada and Virginia. The Passion-flower (admirably figured by Aldinus) is described under its Virginian name, Maracot (the Maracocks of John Smith and Strachey); and a Campanula americana is otherwise named Campanula virginiana, seu ex Virginiis insulis. C. Bauhin, in his "Pinax" (first published in 1623), ed. 1671, p. 276, notes that the Helianthemum indicum tuberosum is called Chrysanthemum è Canada, quibusdam. Canada et Artischoki sub terrâ, aliis. Gigantea, Burgundis. P. Laurenberg, Apparat. Plant. (Rostock, 1632), names the species Adenes canadensis or Flos solis glandulosus. Ant. Vallot, "Hortus Regis Paris.," 1665 (as cited by Bauhin) gives the names Canada and Artischoki sub terrâ, and Canadas, and describes also Helemum canadense altissimum, Vosacan dictum, which Tournefort distinguishes as Corona Solis rapunculi radice (Inst. Herb., 490), and which became H. strumosus. Vosacan, by the way, is a French fashion of writing the Algonkin word *wassakone* or *wassakwan*, which means a "bright yellow flower." The modern Chippeways give this name to the flowers of the Pumpkin and Squash. Under whatever name the Jerusalem Artichoke was described, there seems to have been a general agreement among European botanists that it came from Canada. F. Schuyl, Catal. Horti Lugd. Bat. (Heidelberg, 1672), varies the specific name to Chrysanthemum canadense arumosum. P. Amman, Charac. Plant. Nat. (1676), has Helemum canadense. It was introduced to England about 1617. In that year, Mr. John Goodyer, of Maple Durham, Hampshire, "received two roots thereof from Mr. Franquevill, of London," which were planted and enabled him, before 1621, to "store Hampshire." He wrote an account of the plant, under date of October 17, 1621, for T. Johnson—who printed it in his edition of Gerarde, 1636 (p. 753). Before this species had been figured and described by J. Parkinson, in "Paradisus Terrestris" (London, 1629), as Battatas de Canada, and in his "Theater of Plants," 1640 (p. 1383) he has the figure—a good one—without the description, under the names Battatas de Canada, the French Battatas, or Hierusalem Artichoke. Johnson in Gerarde (p. 753), refers to Parkinson's description, and gives the name as Flos Solis pyramidalis, Jerusalem Artichoke. It already grew well and plentifully in many parts of England.

The notices by early voyagers, of Ground-nuts eaten by the Indians, are generally so brief and so vague, that it is not easy to distinguish the three or four species mentioned under that name or its equivalents. The Solanum tuberosum, Apios tuberosa, Aralia trifolia, and a Cyperus (articulatus ?) were all Ground-nuts, or Earth-nuts. We find, however, in a few instances, unmistakable mention of the roots already known in Europe as Canadian. Brereton, in his account of Gosnold's voyage to New England in 1602, notes the "great store of Ground-nuts found on all the Elizabeth Islands." They grow "forty together on a string, some of them being as large as a hen's egg" (Purchas, iv., 1651). These doubtless were the roots of Apios tuberosa; but when Champlain, a few years later (1605-06) was in the same region, he very frequently observed that the Almouchiquois Indians near Point Mallebarre (Nauset Harbour, probably), had "force des racines qu'els cultivent, lesquelles ont le gout d'artichaut" (Voyages, ed. 1632, p. 84). And it is to these roots, evidently, that Lescarbot alludes in "Histoire de la Nouv. France," 1612 (p. 840): Here is in the country of the Armouchiquois, (*i. e.*, New England, west and south of Maine,) a certain kind of roots "grosses comme naveaux, très excellentes à manger, ayans un gout retirant aux cardes, mais plus agréable, lesquelles plantées multiplient en telle façon que c'est merveille;" and he thinks these must be the Afrodilles described by Pliny. Sagard-Theodat, Hist. du Canada, p. 785 (1636), mentions the cultivation of the Sunflower by the Hurons—who extracted oil from its seeds—and names also the "roots that we [the French] call Canadiennes or Pommes de Canada, and that the Hurons call Orasqueinta, which are not very common in their country. They eat them raw, as well as cooked, as they eat another sort of root resembling Parsnip [Sium lineare ?], which they call Sondhratates and which are much better; but they seldom gave us these, and only when they received some present from us or when we visited them in their cabins." He goes on to speak of "patates, fort grosses et très excellentes," some of which he had obtained from an English vessel captured by the French; but none of these were to be found in the Huron country, nor could the Indians tell him the name of them; and he regretted that he had not brought some with him for planting, since "this root, being cut in pieces and planted, quickly grows and multiplies, it is said, like the pommes de Canada" (pp. 781, 782). It is plain that the Huron roots first mentioned were, or that Sagard believed them to be, Jerusalem Artichokes—already known as Canadian. I find no mention of the Artichoke in Virginia, or the Southern Colonies, before it was cultivated by Anglo-Americans. The author of "A Perfect Description of Virginia," printed in 1649, says that the English planters have (inter alia) "roots of several kindes, Potatoes, Sparagus, Carrets, . . . and Hartichokes." Beverly, ("Hist. of Virginia," 1722, p. 254), mentions Batatas Canadensis, or Jerusalem Artichoke, as planted by some of the English, for brewing beer. Yet the name of one of the esculent roots mentioned by Hariot ("Brief and True Report," &c., 1585) ought to belong to some species of Sunflower—and if to any, to H. tuberosus. Hariot names three tuberous roots found in Virginia:—"Openauk, a kind of roots of round form, some of the bignes of Walnuts, some far greater, which are found in moist and marish grounds growing many together one by another in ropes, or as though they were fastened with a string. Being boiled or sodden, they are very good meate." [C. Bauhin ("Prodromus," 89) identifies these with Solanum tuberosum esculentum—and has been followed by later writers. The description seems to me to indicate Apios tuberosa.] "Kaishucpenauk, a white kind of roots about the bignes of hen egs and nere of that forme: their taste was not so good to our seeming as of the other, and therefore their place and manner of growing not so much cared for by vs; the inhabitants notwithstanding vsed to boile and eat many." These may be Virginia Potatoes, but their name, if Hariot recorded it correctly, means Sun-tubers. The etymology is perfectly clear. The other roots described by Hariot, Okeepenauk are also of round shape, found in dry grounds: some are of the bignes of a man's head," &c. These must be the Tubera terræ maxima, of Clayton, *vulgo* Tuckahoo, which Gronovius (Fl. Virgin., 205) refers to Lycoperdon solidum, and for which Rafinesque (Med. Pl. ii., 270) proposed a new genus, Tucahus. Kalm describes them ("Travels," i., 225) as Truffles. Fries (El. Fung. ii., 39) assigns them to his Pachyma Cocos.

Writing in haste and with frequent interruptions, it has been possible to do little more than copy, without condensing or arranging, such notes as I had before me. They have extended to such a length that I must not add even an apology for the superfluous matter.

J. H. Trumbull.

It would be interesting to know whence came the French name of these Helianthus tubers, Topinambour, it being the only thing in the case which, as Mr. Trumbull remarks, "looks to a Brazilian origin, as it seems to be derived (and so Littré gives it) from the Topinamboux Indians of Brazil." The English name Jerusalem Artichoke, comes, as is well known, from the Italian Girasola, *i. e.*, Sunflower. As to the annual Sunflower, or Helianthus annuus, said by Linnæus to come from Peru and Mexico, I have for some years been convinced that its original is the H. lenticularis of Douglas, which again is probably only a larger form of H. petiolaris of Nuttall, natives of the western part of the Mississippi Valley and of the plains to and beyond the Rocky Mountains. It is an interesting confirmation of this opinion, that Sagard (as mentioned in the above communication) and Champlain found this Sunflower in cultivation by the Huron Indians, for the sake of the oil of its seeds, which they used for hair oil.—"American Journal of Science and Art."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Early Victoria Peach.—This appears to be a capital variety for early forcing, and not so commonly met with as its merits deserve. It is a good average-sized Peach, of excellent flavour, and a capital cropper, and it has a hardy constitution. I have a tree which has produced very heavy crops of fine fruit during the past four seasons without showing any signs of weakness, &c. The house in which it is growing has never been forced before this season, and yet the fruit was ripe on Early Victoria on June 12, quite three weeks before the other tree in the same house, which is a Bellegarde.—H. I. C.

Vines and Potash.—As the result of some experiments made by M. Audoynaud, Professor in the School of Agriculture of Montpellier, on the influence of manures containing potash on the growth of the Vine, recorded in the "Annales Agronomiques," it is stated (1) that sulphate of potash and chloride of potassium have a marked influence on the development of the Vine, and nitrate of potash still more so, while carbonate of potash is less efficient. 2. That weak plants of Vines appear to appropriate as much manure as strong ones. 3. An excess of nitrogenous manure is more hurtful than useful. 4. Potash should enter into the composition of manures for the Vine, that which exists already in the soil being usually not in a fit condition to be readily absorbed. The absorption of the potash seems to be associated with that of the other fertilizing principles. 5. The potash from the root passes to the stem, to the leaves, then to the shoots, and ultimately to the fruit. 6. Only a part of the potash taken up by the root is used up, since after the ripening of the fruit a considerable reserve store is found in the wood. It will be seen that M. Audoynaud's researches are quite in conformity with the plan advocated by Mr. Wildsmith of employing wood ashes as a manure for Vine borders.—"Gardeners' Chronicle."

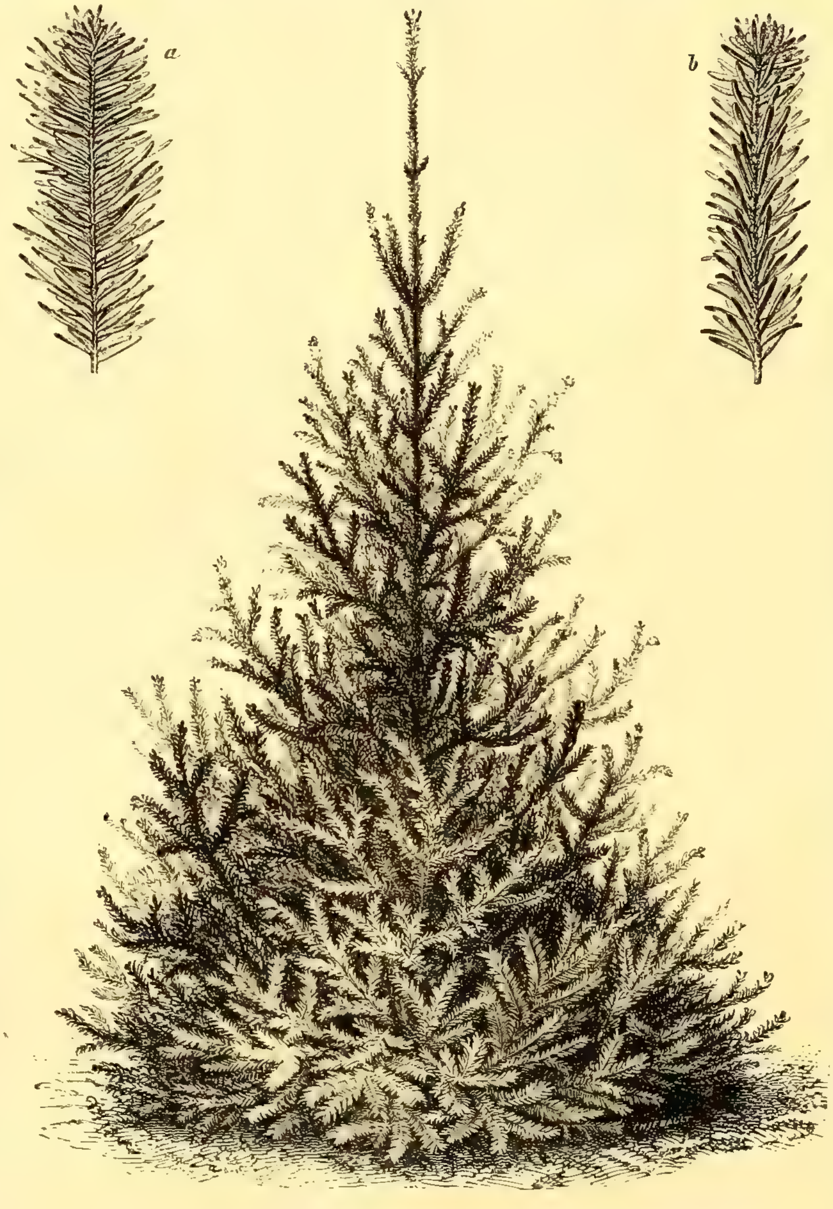
Old Bird-cherry Tree.—The following are the dimensions of an old Bird-cherry tree (Prunus Padus) growing in Ecclesball churchyard. Close to the ground its circumference is 3 ft. at 1 ft. up, 2 ft. 6 in.; at 4 ft. up, 2 ft. 5 in.; at 4 ft. it branches into two parts, the diameter of the branches when in bloom is 28 ft., and the height 26 ft. I cannot form any idea of its age, but an old person of thirty-five years' residence says it seems to have altered but little during that time: there was another tree of similar size, but it was blown down a few years ago.—T. L. Bailey, *Holt House, Abbeydale, Sheffield.*

TREES AND SHRUBS.

THE SILVER FIR.

(PICEA PECTINATA).

THIS Fir, which is a native of Central Europe, Asia, and other temperate regions, was introduced into this country as far back as 1603. Its leaves are dark, glossy above and silvery beneath, and the branches grow in regular whorls round the stem, which is erect and not very tapering. The cones, in contradistinction to those of the Spruce Fir, are upright, while the cones of the latter are pendent and hang on the tree for a longer period. The Silver Fir is, I believe, up to the present time, the loftiest-growing Conifer which we have in Britain. It is a majestic tree either singly or in a clump, and when planted sufficiently apart to allow its branches full development, it becomes feathered to the ground. Its habit is symmetrical, pyramidal, and very formal, particularly when young; when old it presents a greater variety of form and exhibits many picturesque features. The liability of this tree when young to start into growth very early in spring and lose its leading shoots from the effects of frost, has often proved disappointing to nurserymen and planters; probably on this account it has not been so extensively planted as the Larch and the Scotch and Spruce Firs, neither has it ever been so cheap and plentiful in the market as the two latter, owing no doubt to its being so difficult to rear when young; when older and fairly established in its permanent quarters it will withstand the severest winters and will thrive on the most exposed sites. In many localities it is a tree but seldom seen, indeed, in some parts of the country it will not succeed, and again in others it is the most prominent tree, towering high above its compeers and breaking the level outline of wooded hills. The timber of this tree is less valuable than the Larch; under ordinary circumstances it sells at about the same price as the Scotch and Spruce Firs, and is used for similar purposes. A few years ago its timber was in some request for making suites of bedroom furniture, but I do not think it is now in so much demand, apparently having been superseded by the Pitch Pine for that purpose. The Silver Fir thrives well on a variety of soils and subsoils; where lime and chalk abound, perhaps it succeeds the worst, but as a rule it flourishes best in rich loams and clays. At Longleat there are some remarkable noble clumps of this tree growing on directly opposite conditions of soils. The oldest and tallest specimens (probably the largest in England) are growing in a clump in the park; the soil in which they are growing is a rich hazel loam and Kimmeridge clay subsoil; the clump consists of nine trees, and they vary from 105 ft. to 141 ft. high, and girth at 5 ft. above the ground from 10 ft. to 15 ft. 2 in.; they are quite matured, indeed, some of them are becoming decayed, and one or two have withered tops and a great many dead branches. I am unable to give the contents, as it would be dangerous to attempt to climb up amongst the decayed limbs; it is said the highest tree in the clump (its top is now dead and some portion of it broken off) was 150 ft. high about twenty years ago. The clump stands in an open, exposed situation on an elevated level piece of ground on the confines of the grove; it forms an apex to the latter famous collection of fine old timber, and stands out in bold relief as a landmark so far as the eye can reach from prominent heights in the surrounding country. Viewing this clump, too, in the evening at sunset with a brilliant and various coloured horizon as a back ground, it presents a pleasing feature in the landscape, the withered and broken tops add picturesque touches to the clump. Another clump of magnificent trees is growing in an Oak coppice adjoining the park; the soil is a stiff loam on the Oxford clay. Six of the largest trees in this clump measure from 116 ft. to 129 ft. high, and girth at 5 ft. up from 13 ft. to 15 ft.: at 30 ft. up they girth from 10 ft. 7 in. to 12 ft. 3 in.; and at 60 ft. up girth from 7 ft. 3 in. to 8 ft. 5 in. The average cubical contents of six trees is 465 ft.; the largest tree contains 517 ft. The whole of these trees are beautiful, healthy specimens, full of vigour and growth, and are branched quite near the ground. The next clump I will mention is growing in a thin poor soil on the greensand, it was planted probably about the same time as the last-mentioned clump. Twenty of the largest trees in this clump measure from 95 ft. to 114 ft. high, they girth at 5 ft. up from 9 ft. 10 in. to 14 ft.



Masson's Silver Fir (Picea pectinata Massoni).
(*a*) Branch of P. pectinata. (*b*) Branch of P. pectinata Massoni.

3 in., and the contents of each tree vary from 240 ft. to 345 ft. These are all healthy trees and well furnished with branches near to the ground, forming a large, bold, and effective clump, situated on the verge of an open valley with hanging woods on either side, and when viewed from the summit of hills in the vicinity, form a striking feature in this wild ornamental portion of the estate. At Strathfieldsaye there are some fine specimens of the Silver Fir upwards of 140 ft. high, and girthing at 5 ft. up from 11 ft. to 13 ft. 6 in. At Springkell, in Dumfriesshire, there are also some remarkable Silver Firs, twelve of the largest trees measure from 80 ft. to 115 ft. high, and girth at 5 ft. up from 10 ft. 8 in. to 13 ft. 9 in.; their cubical contents vary from 180 ft. to 520 ft. In many other parts of Britain fine specimens may be seen, but I hardly think there are any to be found that will exceed the measurements of those I have given. Although the Silver Fir cannot be classed amongst the most useful and profitable timber trees, it is, however, one of the quickest and tallest-growing Conifers for giving shelter and ornamental effect. It is a most valuable tree for game cover—in fact, I do not know a better tree to plant for filling up blanks in old woods for game shelter, thriving so well as it does in the densest shade, and close under the drip of overhanging trees.

Longleat. George Berry.

EXCRESCENCES ON TREE TRUNKS.

Mr. Thomas Meehan stated that on many trees were peculiar excrescences, which, up to a few years ago, had been referred primarily to insect origin. Cutting these through lengthwise there was no appearance of this agency. There were layers of wood of annual growth, just as in the normal parts of the tree. Examining some Oak knots of this character, and finding pulverulent fungoid matter abundant on the surface, he said he had introduced some of these to the Academy a few years ago, and suggested this as a substitute for the insect theory; but subsequently Professor Farlow had kindly examined them critically and found no trace whatever of fungoid matter in their structure. This left us wholly in the dark as to the exact origin of these structures. It was worth noting that these excrescences were often of a uniform character in each species of tree. In many cases, no matter how large or how old they were, they would separate from the parent stem easily by a short sudden blow. He had made collections of these and in most cases found great uniformity. In Quercus obtusiloba they were depressed globose; in Fagus sylvatica (American Beech) they were convex and oval, with the narrow ends crosswise with the trunk; in the Acer rubrum (Red Maple) they were oval, but drawn out lengthwise; in the common Weeping Willow they varied very much in size, sometimes being as large as a bushel measure, but always knocking out easily as in all named before; in the common Cherry (Cerasus Avium) and the Paper Mulberry (Broussonetia papyrifera) the excrescences were also very irregular in form, and seemed to have a stronger attachment to the parent stem than the others. The Apple had very small and numerous ones in some species; and it was from an examination of these, he said, that he had derived the key to the whole subject. On the bark of some kinds of Apple trees numerous small Pea-like projections would exist on the bark within a space of a few inches. On cutting open, these were found to be not vesicular, but to be filled with hard and perfect wood. A careful examination showed that these woody masses took their rise seemingly from the liber, to which, in the newly formed cases, they would be found still attached by a small thread-like vessel. In order to understand the formation, it was necessary to understand

How Wood is made.

In many trees the annual layer was so regular, and seemed to be placed so nicely, that one not a botanist might be pardoned for believing that the sap was changed to wood matter in the leaves, and the new formed matter sent down, sliding over the old layer like the sections of a telescope; but though the food was prepared by the leaves in a great measure, the actual growth was made by the germination of some of the cells along the whole outside wall of last year's wood beneath the inner bark. In his own observations of this process he had taken the common Cherry for his experiments. The germination of the cells takes place here about the middle of June. He takes a healthy Cherry tree and strips it entirely of its bark to any length desired. At that season a viscid liquid will be found covering the woody surface in abundance. The stripped part is covered with a cloth to prevent evaporation, and in a few days numerous dots, like needle points, will be seen about the sixteenth of an inch apart all over the surface. These are the young cells which have germinated from those of last year. They continue germinating, one from the other, until they meet, when they unite and form a complete surface. In the autumn a layer of wood will be found just as thick as in the part of the tree not disbarked, and a single layer of liber, with its outer coat of cellular matter—perfect bark—will have been formed over the whole. The entire formation of wood and bark can thus be seen by the ordinary observer, without the necessity of any nice microscopical work. Other people have tried the experiment with other trees. He has seen large Apple trees that have had their bark peeled wholly off from their trunks, at the season named, make an entire new layer of bark and wood, not only with no injury to the tree, but to its manifest enjoyment; but his own experiments were confined exclusively to the Cherry. By this experiment we learn that there is no difference primarily in any part of the annual covering. The same cell may become permanent tissue or generating tissue—and from the generative tissue may come before the season of growth closes every form of structure known to anatomists, from pure wood to the outermost cuticle of the bark. How these cells become differentiated may be passed over here. We know that cell-growth is not always uniform in its operations. The law that changes the outermost series of newly made cells into liber need not necessarily operate so exactly as to make them perfect to this end—a few may be thrown off into the liber as generative tissue—and, granting this possibility, we see how the woody granules in the Apple bark are formed. How cells usually of one character may be made to assume others is shown in the

Formation of Adventitious Buds.

Sachs ("Text Book," Eng. ed., p. 563) thinks that few dicotyledons produce adventitious buds. The shoots that often spring from the bark of the older stems of trees, he says, are probably from dormant buds which have retained vitality, though buried from the first growth of the stem. This sort of growth is true. In Gymnocladus the buds formed the first year in the axil of the leaves are in a linear series of three or more, of which but one is generally seen above the surface; but after many years, if the bark be gently shaved, these will be found just beneath the surface as they were the first year, having kept along their hidden growth all that time. In some Magnolias (M. acuminata and M. tripetala), besides the axillary bud, one forms exactly horizontal to it, on the side opposite to the direction of the spiral growth. This bud is rarely seen above the surface, and has not been before made known to botanists, as I believe, but may always be found beneath the surface of the stronger shoots when the bark is gently shaved, no matter how great may be the age, unless, as sometimes happens, some accident should favour its development to a perfect branch. These are the sort of buds referred to by Prof. Sachs, and of course make up their share of new branches when time comes to favour them. He knew of no dicotyledonous tree that could not be made to throw out numerous adventitious buds from any part of its surface by sawing off. In our common street Maples this was everyday experience. A few inches below the cut generally died back from evaporation of the juices; but when the shoots pushed out they came by the dozen in the space of a few inches. Now in the original shoot—the first year's growth—there would be found in a vigorous specimen seldom more than six buds in a length of 6 in.; but in a strong six-year-old branch of Maple (Acer dasycarpum) cut back he had seen as many as fifty shoots in that space. He exhibited a one-year shoot of Catalpa, where the normal buds were 10 in. from each other. In old branches cut back in early winter, so that the surface may harden a little before spring, and thus the tree lose little of its juices by evaporation, shoots will come out numerously from any part of the foot space between these original buds. It was interesting, however, to note that in no case that he knew of would adventitious buds be produced between the nodes from a one-year-old branch. Such a branch cut beneath the node invariably died to the next. It would seem as if the demand on the nutritive powers of the plants for the axial elongation had left the generative tissue with less power than in subsequent years they may possess. How cells which under some circumstances become permanent tissue, or at best generative tissue, may become the parents of adventitious buds and shoots was well shown in cutting down Horse Chestnuts, some Poplars, and some Birches. As before said, during the season following the first year, no adventitious buds will form between the nodes, when the branch is shortened; but in the older trees, the new cells from the generative tissue all along the exposed part or surface of the stump form adventitious buds and branches. The whole circle between last year's wood and the bark produces a forest of branches. He had seen this also, he said, in cotyledons and other succulents under greenhouse culture. From these considerations there was no reason why cells, predestined, under ordinary circumstances, to be merely bark cells in their change from wood cells, should not occasionally retain enough of growth force to carry on a feeble wood-constructing system of their own. We thus come naturally to the

Origin of Woody Excrescences.

Imperfectly formed liber cells, still retaining their generative power, would make a growth the next season, forming a layer of wood, and making its own cortical layer simultaneously with the normal wood growth of the tree, assimilating from the same store of reserve material that the normal growth does. The proof of all this lies in the cutting through longitudinally of one of these excrescences when it will be found to have made one more annual layer from the point of its origin than the tree itself, showing that the origin dated from a double set of germinating cells in that one year. Where, as in the Weeping Willow and Cherry, the excrescences are protruded much beyond the normal diameter of the tree, the annual layers of wood are on the average thicker, through having assimilated a greater share of food, as is generally the case with cells situated above an obstruction; for instance, as when a wire fastened around a branch, a ring of bark taken off, or other means employed to interfere with the connection between root and foliage. Mr. Meehan further said that explanation of growth in connection with these excrescences, explained also much that was usually inexplicable in the various eccentricities of growth. He exhibited a specimen of a trunk of a Bauhinia, presented to the Academy by the Brazilian Centennial Commission, in which the wood seemed a mere fasciculus of many separate stems, forming a sort of ligneous mosaic work. The trunk was about 6 in. in one direction and two in the other. The first year's growth round the small pith was circular; the subsequent ones irregular, through the varying powers of growth in the germinating tissue. Very often, but a very small section of the previous year's circle of wood would germinate, in which case the whole growth would be made from that point pressing round and over with great luxuriance, and enveloping the bark as well as wood of the previous year. Mr. Meehan thought it quite likely that the cases of Wistaria with bark between some of the annual layers of wood, might be explained in a similar way. M. Licopoli, of Naples, has suggested that the appearance of bark mixed with the wood of Wistaria is due to the formation of woody matter by the bark, which wood then continues to grow, and leaves the bark, as it were, behind the wood, instead of being pushed steadily before, as in normal wood growth. Although sure that my facts were as I detailed them, it is pleasant to have the confirmation of my views of these abnormal wood growths in this independent way. The subject of the

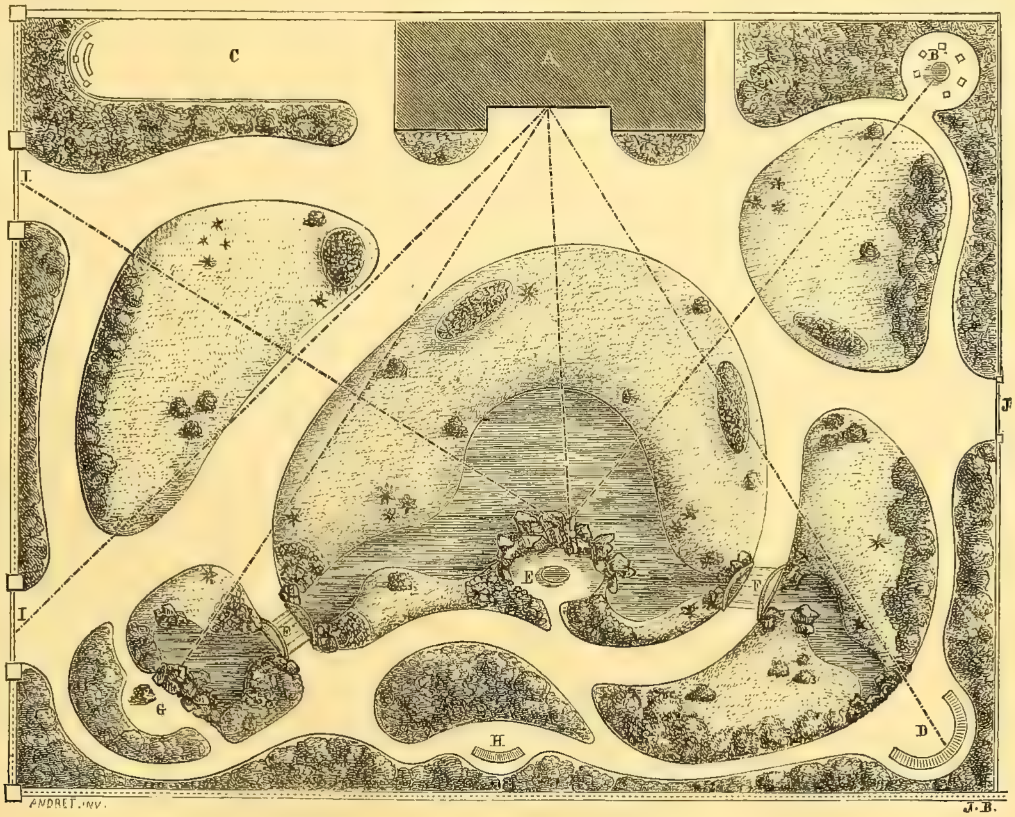
Eccentricity of the Annual Layers of Wood in Trees

could also be understood, keeping in mind the generating tissue, and its varying powers of life and transformation. Anything which favoured nutrition in one part of the mass of cells more than in another, would increase their power of growth, and induce thicker layers at that point than in others. A very hot sun on one side, or in one season on one side, or on particular spots on one side, inducing an inordinate evaporation from those parts, would weaken the vital power of the cell just there. The germination would be weak, and the woody layer thin. Cold winds on one side in very cold weather would have the same effect in some cases. The continual blowing of trees always in one direction might favour assimilation by the cells on one side more than on the other, or even the closer proximity of some cells to healthy foliage or vigorous roots, would give them a greater advantage over others, and the layer would thicken. In some plants there was pretty equally divided power. The whole mass of tissue seemed equally and regularly vitalized, and the generative tissue formed a new layer of wood of about equal thickness all round. But in other trees some masses of cells seemed to easily draw from the others more than their share, and the latter were correspondingly weakened. This was beautifully illustrated in the Hornbeam (Carpinus americana). Here the irregularities in the thickness of the annual layers defied all system. They might be very thick at one point, and yet an inch or two above or below the same layer, be very thin. The Red Cedar (Juniperus virginiana) exhibited similar characters, except that the loss of generative power in some of the cells was more uniformly in a direction lengthwise with the stem. In a section he had recently examined the annual layers were tolerably regular for fifteen years. A young tree of the same species had then grown up close to it on one side, and the annual layers became thinner, finally ceasing there. The other sides grew on as before, the layers tapering, with the weakened vitality, to where the tissue was wholly at rest. So in various parts of the outline could be noted the time when various parts of the generative tissue lost vital power. In one part of the section, in a direct line from the centre, there was a continuous and nearly regular annual layer for over fifty years; but, in many directions, by counting the rings or layers, the time could be traced when the tissue ceased to be generative or nearly so, fifteen, eighteen, twenty-eight, and so on. All the cases of peculiar eccentricities, Hedera, Toxicodendron, Ampelopsis, and the peculiar cases of ordinary timber trees, could be explained by this, so far as to note that the immediate law was a loss of generative power in the cells of the annual layer. Of course, the indirect causes leading to this would be very numerous, and left room for much more investigation. The remarks were made as much as possible in language divested of botanical technicalities for the benefit of those interested in the many other branches of science present; but those who would pursue the subject of wood growth, as described here and applied to the explanation of excrescences and eccentricities, are referred to Sach's "Text Book of Botany." Mr. Martindale inquired if Mr. Meehan had noted the square growth of a Coniferous trunk from the Pacific coast, on exhibition at the recent Centennial, and if that growth could be accounted for on his explanations? Mr. Meehan replied that he had examined that trunk. It was square only at the lower end. It was of Picea amabilis. At the four corners the annual layers were thicker than at the sides. He had no doubt that in that case, and in similar ones if repeated, four strong roots had grown out at nearly equal distances, and the mass of cells nearest to these roots had an advantage in nutrition. We saw this in the trees of our own forests. Just in proportion to the vigour of the roots below was the thickness and irregularity of the trunk for a considerable distance above. If these trees had but four main roots of equal strength at equal distances, a portion of the trunk would be about square. Mr. J. H. Redfield inquired whether Mr. Meehan would class Cypress knees among the excrescences he had described? Mr. Meehan replied: No, as they were an outgrowth from the normal woody system of the roots of the tree, while the excrescences originated in the liber, or the tissue very closely allied thereto.—"Proceedings of the Philadelphia Academy of Sciences."

Philesia buxifolia.—A handsome plant of this is now blooming freely in M. De Smet's nursery at Ghent. Its flowers resemble those of the Lapageria in substance and colour, but are smaller. M. De Smet informs me that it flowers from June till August, and lasts for three weeks in great perfection.—F. H.

GARDEN PLAN.

THE plan published at p. 508, Vol. XI., and there attributed to M. André, was not designed by that gentleman, but by one of the pupils of the late M. Barillet. We have now the pleasure of publishing a plan of a small garden by M. André, which can hardly fail to interest those forming small gardens. It is a small rectangular place at Neuilly, simply designed and agreeably undulated. After (A) the house, (B) the summer-house, (C) gymnasium, and (D) seat in shade, the first interesting reference is (E) a circular place on top of a mound, with rocks disposed in a picturesque manner, and treated according to the style of the calcareous stratification; in the centre is a table, with garden seats. From this point three views are obtainable, one to the house, the second to the summer-pavilion (B), the third to the principal entrance (I). Some Weeping Willows afford a shade to the spot, and the rocks, abruptly disposed above the water, are intermixed with Alpine and rock plants. (F) Two rustic bridges; (G) source of the stream, which disappears under the ground at (D). Rocks covered with Alpine, climbing, and creeping herbaceous plants. (G) is raised about 10 ft. above the level of the surrounding walks. (H) Shady seat behind a deep belt of evergreens, forming the background of this part of the garden, and affording a quiet cover, with grateful shade. (I) Two principal entrances for carriages, with view of the rockery and the house. (J) Entrance to the kitchen garden. The whole ground is gradually undulating towards the central point occupied by the pond, which is about 3 ft. below the platform fronting the house. Both the lateral pavilions of this building are furnished outside with a bed of Rhododendrons. Several flower beds, all elliptic or circular, are placed on the verge of the Grass, and raised 1 ft. above the average level of the walk. The scattered trees are shown on the plan by a round mark; the stellate ones mean the Conifers or hardy and beautiful-foliaged plants. The plantations are planned on the mixed principle, deciduous and evergreens, standard trees and shrubs, flowering and foliaged plants. The walls are well concealed in every direction.



Plan of a Small Garden at Neuilly by E. André.

Castilleja indivisa.—The genus Castilleja is probably but little known to the present generation of horticulturists, though to many of the older ones the name at least of C. coccinea, a species that was temporarily under cultivation about thirty-five years ago, may perhaps be familiar. The true explanation of its rarity in European gardens is probably due to the fact that most of the perennial species, at least, are root parasites, and their cultivation is therefore hopeless. There is, however, good reason to believe that the annual species are more amenable to treatment, and they are too ornamental to be relinquished without a fair trial. Their attractions are due, as in the case of some other interesting plants, less to the beauty of the flowers, properly so called, than to the highly-coloured bracts or floral leaves accompanying them, and in C. indivisa these bracts are of so bright a scarlet as to render the plant most effective. It grows from 1 ft. to 1½ ft. high, with stems sparingly branched and having deeply pinnatifid foliage, with linear acute lobes, the specific name indivisa having reference to the floral leaves or bracts, which are mostly entire. The flowers are arranged in a dense, terminal spike, the corolla being somewhat tubular, scarcely exceeding the calyx in length, and of a yellowish-white colour. Each flower is accompanied by a large ovate bract, the lower half of which is of an agreeable green colour, the rest of the leaf being of a brilliant red. It is to this feature that several of the species owe their popular name of Painted Cup. The seed should be treated like that of half-hardy annuals, sowing in a frame with gentle heat, and employing a light vegetable soil.—W. THOMPSON, *Ipswich.*

Wearied Plants.—"There go those wretched old plants again," said a young friend of mine the other day as we passed together by a house in which a ball was imminent; "I have seen those Palms everywhere for the last month, and as for that Pitcher-plant, I stuffed a cigarette into one of its jugs at Lady Y——'s and smoked that same at Lady Z——'s." It is certainly disenchanting to suspect that the very flowers in a London ball-room are undergoing a course of dissipation similar to that which fades the cheeks of human "wall-flowers." Roses and Geraniums should, at all events, be fresh, since unsullied bloom is their *raison d'être.*—"Truth."

SOCIETIES AND EXHIBITIONS.

WEST OF ENGLAND ROSE SHOW.

The eleventh annual exhibition of the West of England Rose Show was held at Hereford, on July 6, and was a great success in spite of many drawbacks. The weather for some days previously was very unfavourable, and the day itself was rainy, to which must probably be attributed the fact that the attendance was far short of what might reasonably have been expected. The absence, too, of so many of the principal nurserymen and amateurs was to be regretted, Mr. Cant of the nurserymen, and Rev. R. G. Baker, Heavitree, of the amateurs, being the only representatives from a distance. But whatever the show lacked in quantity was quite atoned for in quality, being fully equal in that respect to the show at St. James's Hall, with the further advantage of a much better light. The schedule comprised a full and liberal list of prizes, beginning with Class A 1, nurserymen, open to the United Kingdom.—Here Messrs. Cranston and Co. had it all their own way with as splendid a lot of Roses as any one could desire, and were first with 72, 36 (three trusses), and 24. In form, colour, substance, and (of course) staging they left nothing to be desired, the most noticeable of their blooms, if selection could be made, being—Reynolds Hole, Lælia, Horace Vernet, Auguste Rigotard, Monsieur Boncenne, Victor Verdier, La Rosière, Abel Grand, François Michelon, Louis Van Houtte, Marguerite de St. Amand, Duke of Edinburgh, Thomas Mills, Annie Wood, Mademoiselle Eugénie Verdier, Etienne Levet, Xavier Olibo, Maurice Bernardin, Madame Lacharme, Prince Camille de Rohan, Hardy Frères, Baroness Rothschild, Madame Charles Wood, Mademoiselle Marie Cointet, Rushton Ratcliff, Ferdinand de Lesseps, Madame Caillat, General Jacqueminot (maintaining well his old reputation throughout the show), Annie Laxton, Dr. Andry, Centifolia rosea, Duc de Wellington, Edward Morren, Sir Garnet Wolseley, and Belle Lyonnaise. In the 72 and 36 Messrs. Davison, the White Cross Nurseries, were a good second to Messrs. Cranston & Co., their best blooms, in addition to several of the above, being Marie Baumann, Mlle. Prosper Laugier, Beauty of Thame (rather thin), Julie Touvais, Mme. Hausmann, Marquise de Castellane, Countess of Oxford, Alexander, Leopold II., Black Prince, Duchesse d'Aoste, and Auguste Neumann. In 36, the third prize fell to Mr. Grove, Tupsley; and in 24, in which only two prizes were given, the second was awarded to Mr. Griffiths, Tillington, a special prize in this class being given to Mr. W. Lee, Lyonshall. In Class A 2, open to nurserymen not residing in Herefordshire, Mr. Cant was the only competitor, but well deserved the first prize of £20 awarded him for a glorious display of 72, chief among which may be mentioned—Madame Moreau, Abel Grand, Fisher Holmes, Capt. Christy, Monsieur E. Levet, Victor Verdier, Mrs. Baker, Marie Baumann, Exposition de Brie, Star of Waltham, Louis Van Houtte, Monsieur F. Michelon, Madlle. Marie Rady, Maurice Bernardin, Black Prince, Sir G. Wolseley, Alfred Colomb, Madame Hippolyte Jamain, Thomas Mills, Camille Bernardin, Horace Vernet, Monsieur Woolfield, Niphetos, Ferdinand de Lesseps, Auguste Neumann, and Madame M. Cole. In class B, amateurs, open to the United Kingdom, nothing could exceed the beauty of the collection shown by the Rev. R. G. Baker, Heavitree, Exeter, who was first for 36, 24, 18 (three trusses), and 12. He thus turned the tables on Mr. Jowitt, Old Weir, who beat him at St. James's Hall, winning Messrs. Cranston & Co.'s fifty-guinea Challenge Cup. The fifteen-guinea Challenge Cup given in this class by the same enterprising firm fell, of course, to Mr. Baker. Mr. Jowitt was a very close second to Mr. Baker in 36 and 24; Mr. J. H. Arkwright, Hampton Court, being third; and Rev. C. H. Bulmer, Credenhill, commended. In 18, the Rev. C. H. Bulmer was second; Mr. Arkwright, third. In 12, the Rev. C. H. Bulmer was again second; Mr. J. L. Wight, Tedstone Court, third. For twelve blooms, single trusses of the same Rose, Mr. Arkwright was first with a box of magnificent Maréchal Niel; Mr. Jowitt second, with Monsieur F. Michelon; and the Rev. R. G. Baker third, with Baroness Rothschild. In Class C, open to amateurs residing in Herefordshire, and not exhibiting in class B, the display all through was exceedingly good, especially the Roses of Miss Bulmer, Broadlands, near Hereford, who was easily first for 24, 12 (three trusses), and 12 (singles). In Class D, open to the United Kingdom, for a collection of twelve new Roses, sent out by English nurserymen in the spring of 1875, 1876, and 1877, Messrs. Cranston & Co. were first with Souvenir d'Arthur de Sansal, President Leon de St. Jean, Comtesse de Serenye, Avocat Duvivier, Duchess of Edinburgh (H.P.), Monsieur Alexis Lepere, Henry Bennett, La Rosière, Gustave Revilliod, Abel Carrière, Monsieur E. Y. Teas, and the Rev. J. B. M. Camm. Messrs. Davison & Co. were second, with Comtesse de Serenye, Madame Prosper Langier, La Rosière, Gustave Revilliod, Abel Carrière, Duchess de Valombrosa, Duc de Montpensier, Mrs. Baker, Jean Dalmais, Oxonian, Jean Ducher, and Hippolyte Jamain. For twelve trusses of any new Rose, sent out by English nurserymen in the spring of 1875, 1876, and 1877, Messrs. Cranston & Co. were first with Sir G. Wolsley; Messrs. Davison & Co. second, with Comtesse de Serenye; and Mr. Cant third, with Duchess de Valombrosa. For twelve trusses of Tea or Noisette Roses, Mr. Cant was first, Messrs. Davison & Co. second, and the Rev. C. H. Bulmer third. For twenty-four blooms of any one Rose, Messrs. Davison & Co. were first (François Michelon); Mr. Jowitt second (Marie Baumann); Messrs. Cranston & Co. third (La France). For special prize, given by J. H. Arkwright, Esq., for twelve varieties carrying bloom and buds in various stages, after the manner of Rose portraits as sent out by growers, Messrs. Davison & Co. were the only competitors. Prizes were also given for dinner-table and drawing-room decorations, also for opera, bridal, and hand bouquets, and the displays in all cases were very beautiful.

A City Flower Show.—On Tuesday last an exhibition of window plants and flowers grown within the City was held in the small but pretty gardens of Finsbury Circus. Some hundreds of specimens were exhibited, and the prizes were divided into thirty classes of three prizes each, the majority being open to all except *bona fide* gardeners. Special prizes were given by the Royal Horticultural Society, by Mrs. Smee, and others. The flowers and plants exhibited included Pelargoniums, Fuchsias, Musk, Creeping Jenny, Ferns, Ivy, and Myrtle. Many of the winners were little girls and boys, whose delight at the success of their pet flowers can be well imagined. In the course of the evening the Rev. William Rogers proposed in appropriate terms a vote of thanks to Her Grace the Duchess of Westminster (who distributed the prizes), specially alluding to her efforts and those of her husband to improve the condition of the humbler classes in the City, in which they were so largely interested. The Duke of Westminster said that only within the last few years has it been possible to grow and rear plants in the City, owing to the smoky and impure condition of the atmosphere; but he hoped the time was not far distant when not only the pretty specimens they had seen, but even Roses might be grown. He expressed a hope that the old and disused burial grounds of the City might be utilized, where practicable, as flower-gardens, and that the squares and enclosures of London might be made more generally available for innocent recreation.

Scottish Horticultural Association.—At a meeting of this Association held on Tuesday evening last, Mr. Hugh Fraser gave an account of a visit which he paid to the Dublin Botanic Garden the day previous to the meeting. After complimenting Dr. Moore on the way in which the Garden is being conducted, he made some interesting remarks on the mildness of the climate of Dublin. Shrubs which we consider only half hardy, or at best growing with the aid of walls, were, Mr. Fraser said, in glorious perfection in the open border. Fabiana imbricata, Eurybia Gunni, various species of greenhouse Acacias, Chamærops chinensis, and numerous others were flowering in perfection. Mr. McLeod, superintendent of public gardens in Edinburgh, described a plant which he had seen the other day of Clianthus puniceus growing on the gable of a house at Liberton, and of which an account appeared in The Garden last week (see p. 5). Mr. Carson, of Melbourne, gave an amusing account of the way in which he began to grow Oranges in Australia. Mr. Dunn, the president, furnished a very interesting account of a ten years' experience in growing various half-hardy plants in Ireland. —R. M. A.

Horticultural Exhibition at Oporto.—At this exhibition Mr. B. S. Williams was placed first in the following classes:—New plants, gold medal (the only one awarded); Orchids, silver medal; and new Dracænas, silver medal. A first prize was also awarded to him for works on Orchids, Ferns, stove plants, &c. The premier prize, a handsome silver cup presented by the Municipality, was unanimously awarded to Mr. Williams, who was considered to have contributed the finest collection of plants in the show. The group in question included Pitcher-plants, Dracænas, over twenty Orchids, and many other new and rare plants, all of which arrived at Oporto in excellent condition.

NOTES AND QUESTIONS—VARIOUS.

Stapelias.—As I fail to grow these satisfactorily, I should be greatly obliged by a few hints as to the best mode of managing them.—A. B. [They flower best when placed on a shelf in a greenhouse, and fully exposed to direct sunshine, allowing them to have a good roasting. If shaded or over-moist they grow, but do not flower.—J. Croucher.]

Splitting of Peach Stones.—Can any of your correspondents give me any clue to the cause and cure of this disaster? We have two trees in our second and late Peach-houses respectively, the fruit-stones of which have split somewhat considerably during the past two years. In the past winter I lifted the roots of one, and re-planted them in fresh soil, thinking that might be a preventive. I find, however, that there are a number of the fruits again with split stones. The roots of both trees are partially inside and partially out, and have not suffered from want of water at any time.—C. J. H.

The First Fuchsia.—Allow me to remind Mr. Bullen (see p.10) that Fuchsia coccinea is not the plant which he has described. Few have seen the true F. coccinea: I never yet met with it, nor am I aware that it is in commerce. The Fuchsia to which Mr. Bullen alludes is, I believe, F. virgata. The true F. coccinea was discovered by accident in the Botanic Garden at Oxford, by some botanist (whose name I forget), and is a totally different plant from the one described by Mr. Bullen.—Thos. Williams, *Ormskirk.*

Dendrochilum filiforme.—This graceful Orchid is now in unusually good condition in Messrs. Rollisson's nursery at Tooting. Plants of it in 6-in. pots bear from twenty to thirty long pendent spikes of greenish-yellow blossoms; associated with these are also some plants of it equally floriferous, growing in wooden baskets suspended from the roof.—S.

Tabernæmontana camassa.—Growers of flowers for market should cultivate a house of this plant alone. It is a newly-introduced evergreen stove shrub of a neat, compact, dwarf habit, with glossy bright Laurel-like leaves, and racemes of double white flowers of Gardenia-like outline and fragrance, which are produced on the point of every shoot. From the Gardenia it differs in its easier growth, and in requiring a much less stimulating atmosphere to produce its bloom; the usual temperature of a hothouse with less humidity will produce blooms more freely and longer in succession. The petals of the flowers are lighter and more elegantly arranged than the Gardenia, and not quite so large: small plants in 3-in. pots will produce flowers freely.—John Saul.

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"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

SHAKESPEARE'S ROSES.

(1) *Titania.* Some to kill cankers in the Musk Rosebuds.
Midsummer Night's Dream, act ii., sc. 3.
Titania. And stick Musk Roses in thy sleek, smooth head.
Ibid., act iv., sc. 1.

(2) *Julia.* The air hath starved the Roses in her cheeks.
Two Gentlemen of Verona, act iv., sc. 4.

(3) *Song.* There will we make our beds of Roses
And a thousand fragrant posies.
Merry Wives of Windsor, act iii., sc. 1.

(4) *Autolycus.* Flowers as sweet as Damask Roses.
Winter's Tale, act iv., sc. 3.

(5) *Olivia.* Cæsario, by the Roses of the spring,
By manhood, honour, truth, and everything,
I love thee so.
Twelfth Night, act iii., sc. 1.

(6) *Diana.* When you have our Roses,
You barely leave us thorns to prick ourselves,
And mock us with our bareness.
All's Well That Ends Well, act iv., sc. 2.

(7) *Lord.* Let one attend him with a silver basin
Full of Rose water and bestrewed with flowers.
Taming of the Shrew (Introduction).

(8) *Petruchio.* I'll say she looks as clear
As morning Roses newly washed with dew.
Ibid., act ii., sc. 1.

(9) *Tyrrell.* Their lips were four red Roses on a stalk,
Which in their summer beauty kissed each other.
Richard III., act iv., sc. 3.

(10) *Gower.* Even her art sisters the natural Roses.
Pericles, act v., chorus (see Cherry, No. 5).

(11) *Friar.* The Roses in thy lips and cheeks shall fade
To paly ashes.
Romeo and Juliet, act iv., sc. 1.

(12) *Romeo.* Remnants of packthread in old cakes of Roses
Were thinly scattered to make up a show.
Ibid., act v., sc. 1.

(13) *Hamlet.* With two Provincial Roses on my razed shoes.
Hamlet, act iii., sc. 2.

(14) *Laertes.* O, Rose of May,
Dear maid, kind sister, sweet Ophelia.
Ibid., act iv., sc. 5.

(15) *Duke.* For women are as Roses whose fair flower,
Being once displayed, doth fall that very hour.
Twelfth Night, act ii., sc. 4.

(16) *Constance.* Of Nature's gifts, thou may'st with Lilies boast,
And with the half-blown Rose.
King John, act iii., sc. 1.

(17) *Queen.* But soft, but see—or rather do not see—
My fair Rose wither.
Richard II., act v., sc. 1.

(18) *Hotspur.* To put down Richard, that sweet lovely Rose,
And plant this Thorn, this canker, Bolingbroke.
1st Henry IV., act i., sc. 3.

(19) *Hostess.* Your colour, I warrant you, is red as any Rose.
2nd Henry IV., act ii., sc. 4.

(20) *York.* Then will I raise aloft the milk-white Rose,
With whose sweet smell the air shall be perfumed.
Ibid., act i., sc. 1.

(21) *Don John.* I had rather be a canker in a hedge than a Rose in his grace.
Much Ado About Nothing, act i., sc. 3.

(22) *Theseus.* But earthlier happy is the Rose distilled
Than that which, withering on the virgin Thorn,
Grows, lives, and dies in single blessedness.
Midsummer Night's Dream, act i., sc. 1.

(23) *Lysander.* How now, my love? Why is your cheek so pale?
How chance the Roses there do fade so fast?
Ibid.

(24) *Titania.* The seasons alter: hoary-headed frosts
Fall on the fresh lap of the crimson Rose.
Ibid., act ii., sc. 2.

(25) *Thisbe.* Of colour like the red Rose on triumphant Briar.
Ibid., act iii., sc. 1.

(26) *Biron.* At Christmas I no more desire a Rose
Than wish a snow in May's new-fangled shows,
But like of each thing that in season grows.
Love's Labour's Lost, act i., sc. 1.

(27) *King.* So sweet a kiss the golden sun gives not
To those fresh morning drops upon the Rose.
Ibid., act iv., sc. 3.

(28) *Boyet.* Blow like sweet Roses in the summer air.
Princess. How blow? how blow? Speak to be understood.
Boyet. Fair ladies masked are Roses in their buds,
Dismasked, their damask sweet commixture shown,
Are angels veiling clouds, or Roses blown.
Ibid., act v., sc. 2.

(29) *Touchstone.* He that sweetest Rose will find,
Must find Love's prick and Rosalind.
As You Like It, act iii., sc. 2.

(30) *Countess.* This thorn
Doth to our Rose of youth rightly belong.
All's Well That Ends Well, act i., sc. 3.

(31) *Bastard.* My face so thin,
That in mine ear I durst not stick a Rose.
King John, act i., sc. 1.

(32) *Antony.* Tell him he wears the Rose
Of youth upon him.
Antony and Cleopatra, act iii., sc. 11.

(33) *Cleopatra.* Against the blown Rose may they stop them more
That kneeled unto the buds. *Ibid.*

(34) *Boult.* For flesh and blood, sir, white and red, you shall see a Rose and she were a Rose indeed!
Pericles, act iv., sc. 6.

(35) *Juliet.* What's in a name? That which we call a Rose
By any other name would smell as sweet.
Romeo and Juliet, act ii., sc. 2.

(36) *Ophelia.* The expectancy and Rose of this fair state.
Hamlet, act iii., sc. 1.

(37) *Hamlet.* Such an act . . . . takes off the Rose
From the fair forehead of an innocent love,
And sets a blister there. *Ibid.,* act iii., sc. 4.

(38) *Othello.* When I have plucked the Rose,
I cannot give it vital growth again,
It needs must wither. I'll smell it on the tree.
Othello, act v., sc. 2.

(39) *Timon.* Rose-cheeked youth.
Timon of Athens, act iv., sc. 3.

(40) *Othello.* Thou young and Rose-lipped cherubim.
Othello, act iv., sc. 2.

(41) Roses have thorns and silver fountains mud,
And loathsome canker lives in sweetest bud.
Sonnet 35.

(42) The Rose looks fair, but fairer we it deem
For that sweet odour that doth in it live
The canker blooms have full as deep a dye
As the perfumed tincture of the Roses,
. . . . . but they
Die to themselves—Sweet Roses do not so;
Of their sweet deaths are sweetest odours made. *Ibid.* 54.

(43) Why should poor beauty indirectly seek
Roses of shadow, since his Rose is true? *Ibid.* 67.

(44) Shame, like a canker in the fragrant Rose,
Doth stop the beauty of thy budding name. *Ibid.* 95.

(45) Nor did I wonder at the Lilies white
Nor praise the deep vermilion of the Rose. *Ibid.* 98.

(46) The Roses fearfully in thorns did stand,
One blushing shame, another white despair,
A third, nor red nor white, had stolen of both
And to his robbery had annexed thy breath. *Ibid.* 99.

(47) I have seen Roses damasked, red and white,
But no such Roses see I in her cheeks. *Ibid.* 130.

(48) More white and red than doves and Roses are.
Venus and Adonis.

(49) What though the Rose has prickles? yet 'tis plucked. *Ibid.*

(50) Who, when he lived, his breath and beauty set
Gloss on the Rose, smell to the Violet. *Ibid.*

(51) This silent war of Lilies and of Roses.
Rape of Lucrece.

(52) O how her fear did make her colour rise,
First red as Roses that on lawn we lay,
Then white as lawn, the Roses took away. *Ibid.*

(53) That even for anger makes the Lily pale,
And the red Rose blush at her own disgrace. *Ibid.*

(54) I know what thorns the growing Rose defends. *Ibid.*

(55) Sweet Rose, fair flower, untimely plucked, soon vaded,
Pluck'd in the bud, and vaded in the spring.
The Passionate Pilgrim.

In addition to these many passages, there are perhaps thirty more in which the Rose is mentioned, but all having reference only to the Red and White Roses of the houses of York and Lancaster. To quote these it would be necessary to extract the entire Act, which is very graphic, but too long. I must, therefore, content myself with the beginning and the end of the chief scene, and refer the reader who desires to see it *iu extenso* to "1st Henry VI.," act ii., sc. 4. The scene is in the Temple Gardens, and Plantagenet and Somerset thus begin the fatal quarrel.

Plantagenet. Let him that is a true-born gentleman,
And stands upon the honour of his birth,
If he suppose that I have pleaded truth,
From off this Brier pluck a White Rose with me.

Somerset. Let him that is no coward, nor no flatterer,
But dare maintain the party of the truth,
Pluck a Red Rose from off this thorn with me.

And Warwick's wise conclusion on the whole matter is—

This brawl to-day,
Grown to this faction in the Temple Garden,
Shall send, between the Red Rose and the White,
A thousand souls to death and deadly night.

There are further allusions to the same Red and White Roses in "3rd Henry VI.," act i., sc. 2, "3rd Henry VI.," act ii., sc. 5, "1st Henry VI.," act 4, sc. 1, and "Richard III.," act v., sc. 4.

There is no flower so often mentioned by Shakespeare as the Rose, and he would probably consider it the queen of floures, for it was so deemed in his time. "The Rose doth deserve the cheefest and most principall place among all flowers whatsoever, being not onely esteemed for his beautie, vertues, and his fragrant and odoriferous smell, but also because it is the honore and ornament of our English Scepter" (Gerarde). Yet the kingdom of the Rose even then was not undisputed; the Lily was always its rival (see Lily), for thus sang Walter de Biblesworth in the thirteenth century—

En ço verger troveroums les flurs
Des quens issunt les douz odours (swote smel)
Les herbes ausi pur medicine
La flur de Rose, la flur de liz (lilie)
Liz vaut pur royne, Rose pur piz.

But a little later the great Scotch poet Dunbar, who lived from 1460 to 1520, that is, a century before Shakespeare asserted the dignity of the Rose as even superior to the Thistle of Scotland.

Nor hold none other flower in sic dainty
As the fresh Rose of colour red and white;
For if thou dost, hurt is thine honesty,
Considering that no flower is so perfite,
So full of virtue, pleasaunce, and delight,
So full of blissful angelic beauty,
Imperial birth, honour, and dignity.

Volumes have been written, and many more may still be written, on the delights of the Rose, but my present business is only with the Roses of Shakespeare. In many of the above passages the Rose is simply the emblem of all that is loveliest, and brightest, and most beautiful upon earth, yet always with the underlying sentiment that even the brightest has its dark side, as the Rose has its thorns, that the worthiest objects of our earthly love are at the very best but short-lived, that the most beautiful has on it the doom of decay and death. These were the lessons that even the heathen writers learned from their favourite Roses, and which Christian writers of all ages loved to learn also, not from the heathen writers, but from the beautiful flowers themselves. "The Rose is a beautiful flower," said S. Basil, "but it always fills me with sorrow by reminding me of my sins, for which the earth was doomed to bear thorns." And it would be easy to fill a volume, and it would not be a cheerless volume, with beautiful and expressive passages from poets, preachers, and other authors, who have taken the Rose to point the moral of the fleeting nature of all earthly things. Herrick in four lines tells the whole:—

Gather ye Roses while ye may,
Old time is still a-flying,
And the same flower that smiles to-day,
To-morrow will be dying.

But Shakespeare's notices of the Rose are not all emblematical and allegorical. He mentions these distinct sorts of Roses—the Red Rose, the White Rose, the Musk Rose, the Provençal Rose, the Damask Rose, the Variegated Rose, and the Canker Rose. The Canker Rose is the wild Dog Rose, and the name is sometimes applied to the common Red Poppy. The Red Rose and the Provençal Rose (No. 13) are no doubt the same, and are what we now call R. centifolia, or the Cabbage Rose, a Rose that has been supposed to be a native of the south of Europe, but Dr. Lindley preferred "to place its native country in Asia, because it has been found wild by Bieberstein with double flowers, on the eastern side of Mount Caucasus, whither it is not likely to have escaped from a garden." We do not know when it was introduced into England, but it was familiar to Chaucer—

The savour of the Roses swote
Me smote right to the herte rote,
As I hadde alle embawmed be.
. . . .
Of Roses there were grete wone,
So faire wexe never in Rone.

i.e., in Provence, at the mouth of the Rhone. For beauty in shape and exquisite fragrance, I consider this Rose to be still unrivalled, but it is not a fashionable Rose, and is usually found in cottage gardens, or perhaps in some neglected part of gardens of more pretensions. I believe it is considered too loose in shape to satisfy the floral critics of exhibition flowers, and it is only a summer Rose, and so contrasts unfavourably with the Hybrid Perpetuals. Still, it is a delightful Rose, delightful to the eye, delightful for its fragrance, and most delightful from its associations.

The White Rose of York (No. 20) has never been satisfactorily identified. It was clearly a cultivated Rose, and by some is supposed to have been only the wild White Rose (R. arvensis) grown in a garden. But it is very likely to have been the Rosa alba, which was a favourite in English gardens in Shakespeare's time, and was very probably introduced long before his time, for it is the double variety of the wild White Rose, and Gerarde says of it:—"The double White Rose doth grow wilde in many hedges of Lancashire in great abundance, even as Briers do with us in these southerly parts, especially in a place of the countrey called Leyland, and in a place called Roughford, not far from Latham." It was, therefore, not a new gardener's plant in his time, as has been often stated. I have little doubt that this is the White Rose of York; it is not the R. alba of Dr. Lindley's monograph, but the double variety of the British R. arvensis.

The White Rose has a very ancient interest for Englishmen, for "long before the brawl in the Temple Gardens, the flower had been connected with one of the most ancient names of our Island. The elder Pliny, in discussing the etymology of the word Albion, suggests that the land may have been so named from the White Roses which abounded in it—'Albion' insula sic dicta ab albis rupibus quas mare alluit, vel ob rosas albas quibus abundat.' Whatever we may think of the etymological skill displayed in the suggestion . . . we look with almost a new pleasure on the Roses of our own hedgerows, when regarding them as descended in a straight line from the 'rosas albas' of those far-off summers." Qu. R, vol. 114.

The Damask Rose (No. 4) remains to us under the same name, telling its own history. There can be little doubt that the Rose came from Damascus, probably introduced into Europe by the Crusaders or some of the early travellers in the East, who speak in glowing terms of the beauties of the gardens of Damascus. So Sir John Mandeville describes the city—"In that Cytee of Damasce, ther is gret plentee of Welles, and with in the Cytee and with oute, ben many fayre Gardynes and of dyverse frutes. Non other Cytee is not lyche in comparison to it, of faire Gardynes, and of faire desportes." (Voiage and Travaile, cap. 11). And in our own day the author of Eothen described the same gardens as he saw them:—"High, high above your head, and on every side all down to the ground, the thicket is hemmed in and choked up by the interlacing boughs that droop with the weight of Roses, and load the slow air with their damask breath. There are no other flowers. The Rose trees which I saw were all of the kind we call 'damask'; they grow to an immense height and size." ("Eothen," ch. 27). It was not till long after the Crusade that the Damask Rose was introduced into England, for Hakluyt in 1582 says:—"In time of memory many things have been brought in that were not here before, as the Damaske Rose by Doctour Linaker, King Henry the Seventh and King Henrie the Eight's Physician."—("Voiages," vol. 2).

As an ornamental Rose the Damask Rose is still a favourite, though probably the real typical Rosa damascena is very seldom seen—but it has been the parent of a large number of Hybrid Roses, which the most critical Rosarian does not reject. The whole family are very sweet-scented, so that "sweet as Damask Roses" was a proverb, and Gerarde describes the common Damaske as "in other respects like the White Rose; the especiale difference consisteth in the colour and smell of the floures, for these are of a pale red colour and of a more pleasant smell, and fitter for meate or medicine."

The Musk Roses (No. 1) were great favourites with our forefathers. The Rose (R. moschata) is a native of the north of Africa and of Spain, and has been also found in Nepaul. Hakluyt gives the exact date of its introduction. "The turkey cocks and hennes," he says, "were brought about fifty yeres past, the Artichowe in time of King Henry the Eight, and of later times was procured out of Italy the Muske Rose plant, the Plumme called the Perdigwena, and two kindes more by the Lord Cromwell after his travel."—"Voiages," vol. 2. It is a long straggling Rose, bearing bunches of single flowers, and is very seldom seen except against the walls of some old houses. "You remember the great bush at the corner of the south wall just by the blue drawing-room windows; that is the old Musk-rose, Shakespeare's Musk-rose, which is dying out through the kingdom now."—("My Lady Ludlow," by Mrs. Gaskell).—But wherever it is grown it is highly prized, not so much for the beauty as for the delicate scent of its flowers. The scent is unlike the scent of any other Rose, or of any other flower, but it is very pleasant, and not overpowering; and the plant has the peculiarity that, like the Sweet Briar, but unlike other Roses, it gives out its scent of its own accord and unsought, and chiefly in the evening, so that if the window of a bedroom near which this Rose is trained be left open, the scent will soon be perceived in the room. This peculiarity did not escape the notice of Lord Bacon. "Because the breath of flowers," he says, "is far sweeter in the air (when it comes and goes like the warbling of music) than in the hand, therefore nothing is more fit for that delight than to know what be the flowers and plants that do best perfume the air. Roses, damask and red, are fast flowers of their smells, so that you may walk by a whole row of them, and find nothing of their sweetness, yea, though it be in a morning's dew. Bays, likewise, yield no smell as they grow, Rosemary little, nor Sweet Marjoram; that which above all others yields the sweetest smell in the air is the Violet, especially the white double Violet which comes twice a year, about the middle of April, and about Bartholomew-tide—next to that is the Musk-rose."—"Essay of Gardens."

The Roses mentioned in Nos. 34, 46, and 47 as a mixture of red and white must have been the mottled or variegated Roses, commonly called the York and Lancaster Roses; these are old Roses, and very probably quite as old as the sixteenth century. There are two varieties: in one each petal is blotched with white and pink; this is the R. versicolor of Parkinson, and is a variety of R. damascena; in the other most of the petals are white but with a mixture of pink petals; this is the Rosa Mundi or Gloria Mundi, and is a variety of R. gallica.

These, with the addition of the Eglantine and Sweet Brier, are the only Roses mentioned by their names by Shakespeare, and they were the chief sorts grown in his time, but not the only sorts; and to what extent Roses were cultivated in Shakespeare's time, we have a curious proof in the account of the grant of Ely Place, in Holborn, the property of the Bishops of Ely. "The tenant was Sir Christopher Hatton (Queen Elizabeth's handsome Lord Chancellor), to whom the greater portion of the house was let in 1576 for the term of twenty-one years. The rent was a Red Rose, ten loads of hay, and ten pounds per annum; Bishop Cox, on whom this hard bargain was forced by the Queen, reserving to himself and his successors the right of walking in the gardens, and gathering twenty bushels of Roses yearly."—Cunningham.

My space forbids me to enter more largely into any account of these old species, or to say much of the many very interesting points in the history of the Rose, but two or three points connected with Shakespeare's Roses must not be passed over. First, its name. He says through Juliet (No. 35) that the Rose by any other name would smell as sweet. But the whole world is against him. Rose was its old Latin name corrupted from its older Greek name, and the same name, with slight and easily-traced differences, has clung to it in almost all European countries.

Shakespeare also mentions its uses in Rose-water and Rose-cakes, and it was only natural to suppose that a flower so beautiful and so sweet was meant by Nature to be of great use to man. Accordingly we find that wonderful virtues were attributed to it, and an especial virtue was attributed to the dewdrops that settled on the full-blown Rose. Shakespeare alludes to these in Nos. 22 and 27; and from these were made cosmetics only suited to the most extravagant.

> The water that did spryng from ground
> She would not touch at all,
> But washt her hands with dew of Heaven
> That on sweet Roses fall.
> *The Lamentable Fall of Queen Elinor*—"Roxburgh Ballads."

And as with their uses, so it was also with their history. Such a flower must have a high origin, and what better origin than the pretty mediæval legend told to us by Sir John Mandeville?—"At Betheleim is the Felde *Floridus*, that is to seyne, the *Feld florisched;* for als moche as a fayre mayden was blamed with wrong and sclaundred, for whiche cause sche was demed to the Dethe, and to be brent in that place, to the whiche she was ladd; and as the Fyre began to bren aboute hire, sche made hire preyeres to oure Lord, that als wissely as sche was not gylty of that Synne, that He wolde helpe hire and make it to be knowen to alle men, of his mercyfulle grace. And when sche hadde thus seyd, sche entred into the Fuyer; and anon was the Fuyr quenched and oute; and the Brondes that weren brennynge becomen red Roseres, and the Brondes that weren not kyndled becomen white Roseres, full of Roses. And these weren the first Roseres and Roses, both white and rede, that evere ony man saughe" ("Voiage and Travaile," cap. 6.)

With this pretty legend I may well conclude the account of Shakespeare's Roses, commending, however, M. Biron's sensible remarks on unseasonable flowers (No. 26) to those who estimate the beauty of a flower or anything else in proportion to its being produced out of its natural season.

H. N. Ellacombe.

A VALUABLE NEW TREE.

We have received from Mr. John Luscombe, of Combe Royal, South Devon, a very beautiful specimen of a tree which is likely to prove a very desirable addition to our gardens. This is Idesia polycarpa, a Japanese tree, which was not known to science until 1866, when it was described by the Russian botanist Maximowicz, who met with it in cultivation at Nipon and Yedo, in Japan, and ascertained that it was a native of the island Kiusiu, at the foot of a mountain called Hikosan. Mr. Luscombe describes it as a handsome tree-like spreading shrub, with fine foliage, but according to Professor Maximowicz it attained in Japan the dimensions of a large tree. The leaves in the specimen before us are irregularly serrate, acuminate, very slightly cordate at the base, the larger ones about 6 in. across, bright green above, whitish or almost glaucous beneath, with five prominent branching nerves, which are reddish towards the base: the leaves are borne on red petioles about their own length. The flowers are diœcious; the males, which Mr. Luscombe has sent us, have from four to six yellowish-green spreading sepals, and an indefinite number of pale green filaments with orange anthers. Each blossom is about ½ in. across; they form long, gracefully-drooping, branched racemes, springing from the axils of the upper leaves. The female flowers are similar in appearance, but are succeeded by very numerous orange berries, which appear, from dried specimens communicated by the discoverer to the British Museum Herbarium, to be about as large as a small Cherry. The flowers are deliciously fragrant, their odour resembling that of a Vanda; and, although their colouring is not brilliant, their effect, combined with the red leaf-stalks, the varying green of the leaves, and their elegant drooping habit is extremely pleasing. The tree belongs to the Order Bixineæ (or Flacourtiaceæ), to which our gardens have not hitherto been largely indebted. It was named by M. Maximowicz in commemoration of a Dutch traveller named Ides, who was sent to China by Peter the Great at the beginning of the last century, and who subsequently published an account of his travels.

NOTES OF THE WEEK.

Plants Tied into Bundles.—Among the various practices which waste the time of gardeners, and tend to make our gardens ugly, may be named that of tying beautiful plants into besoms. Wherever possible staking should be avoided. One of the loveliest fringes of blossom we have ever seen in garden or in wild has been afforded lately by a line of Everlasting Peas in Mr. Parker's Nursery at Tooting, not staked at all, but wandering about in all sorts of graceful ways. Treated so Everlasting Peas become one of the most effective materials in the hands of the artistic gardener. The brilliant crimson variety of the old Everlasting Pea, which may be seen in great beauty in this nursery is likely in time to supplant the old variety. The white, the striped, and this fine form associated together are among the most beautiful of all things that may be grown in any soil or situation.

Jargonelles from France.—The first consignment of Jargonelle Pears to Covent Garden market from the south of France arrived last week. They are somewhat small individually, but of fair quality, and we are told that in a few weeks very large consignments of better fruit may be expected.

York and Lancaster Rose.—I saw a group of this at Mr. Parker's at Tooting the other day, and was struck with the size and the handsome markings of its blooms. It is, I think, the finest of all striped hardy flowers, and well deserves culture. Such subjects have often been lost, and still more often weakened by planting among mixed shrubs and in borders. This would be best grouped with other interesting old Roses, or even in a small bed by itself.—R.

Flora in the Music Hall.—The Carnation and Picotee Show at the Westminster Aquarium the other day brought together a great number of beautiful flowers, which, however, could not be enjoyed, owing to the jingling music that accompanied the various music hall entertainments to which this place is devoted. We, of course, have nothing to say against daylight theatricals and music hall performances, but we may ask the promoters of this society whether it is wise to bring their beautiful flowers to a place where they may not be enjoyed except under the influences of the distractions above alluded to? The majority of Londoners who care for flowers answer this question unmistakably—by not going!

The Prickly Thrifts.—Few would seem to have any idea of how much is lost by many of our herbaceous and Alpine plants in pots. Many of them are never seen in fair health in these, and often perish when planted out of them. The public should be able to obtain strong plants grown in the open ground, and sent in Moss instead of a pot. Many persons are disheartened, owing to the wretched mites of plants that are often sent out. I have so often seen the Prickly Thrifts starved in small pots that I was pleased to see last week one of them (Acantholimon glumaceum) a rosy cushion of flowers more than 1 ft. through. It is on a hot border at the foot of the house wall in the Exotic Nursery, Tooting. The heat or drought did not seem to have the least effect on its abundant flowers.—V.

Sardinian Balsams and Zinnias.—Messrs. Stuart & Co., of Tavistock Row, Covent Garden, have shown us some lovely blooms of Balsams and Zinnias, the produce of plants raised in their seed-grounds at Nice. The Balsams consisted of white, purple, scarlet, and carnation-striped kinds, large and double; and amongst the Zinnias were scarlet and reds of different shades, white, purple, and sulphur-coloured varieties, some of which measured more than 3 in. across, and they were as double as any of the best forms of Chrysanthemum. Along with them, too, were miniature Zinnias, quite as perfect in form as the larger kinds.

Small Fruits in Kent.—Although complaints are being made on all sides of the failure of the fruit crop this season, the enormous quantities of small fruits which can now be made into preserves will go far to compensate for the loss of other kinds. In Kent, Strawberries are this year wonderfully abundant though rather small; and some idea of the quantity grown in the neighbourhood of Swanley may be gleaned from the fact that Mr. Cannell has informed us that a neighbour of his on one day last week sent to London 2500 pecks of Strawberries. This, reckoning 14 lb. to the peck, would amount to nearly 16 tons. One grower in Kent, we were informed the other day, sold last year 125 tons of Strawberries. Raspberries are in great demand; one buyer last week wanted to purchase 100 tons for preserving, and one grower had contracted to supply 10 tons of that quantity. Of Gooseberries, one cultivator sent 120 bushels to Sunderland, and a similar quantity was bein gathered for Manchester. It will thus be seen that great as i our foreign trade in fruits, a large amount of our small fruits is still supplied by English growers.

Audley End.—The illustration of Audley End published this week was from a photograph by Mr. Vernon Heath, and for which we are indebted to that gentleman.

Royal Botanic Society.—At a meeting of the Council of this Society, held on June 14th, a special gold medal was awarded to Messrs. Carter & Co., of High Holborn, for their collection of fine-foliaged plants and annuals grown in pots from seed, and exhibited in the gardens of the Society during the month of June.

Effects of the Weather in Dorsetshire.—Mr. Pragnell, of Sherborne, informs us that the hot days and cold windy nights which have lately been experienced in that part of Dorsetshire have had a disastrous effect upon vegetation, which has suffered severely this season, even in that favoured district. The Potato disease, too, has made its appearance, and is rapidly increasing.

Labels.—Messrs. Bradley & Sons, Halam Nursery, near Southwell, Notts, have sent us specimens of wooden labels in which both names and numbers which are printed are slightly sunk in the wood and blackened, the result being a very legible label. Some are varnished and some are not: but possibly the varnished ones may prove the most durable. The wood itself consists of Oak, Beech, and Red Deal steeped in oil; one of the labels sent, made of horn, is light and transparent, the lettering being impressed on it as in the case of the wood. Labels of this kind may eventually prove to be the best, and they can be made of almost any form desired.

Annuals at Reading.—The display of annuals in Messrs. Sutton's seed-grounds about a mile from Reading continues to attract attention, the kinds being not only numerous but well varied in colour. Among the most effective are Red Virginian Stock, White Candytuft, Clarkia pulchella, Silene pendula compacta, Lupinus nanus, Crimson Candytuft, Saponaria calabrica, tall dark Nasturtium, Viscaria oculata, new dark Convolvulus, yellow Tom Thumb Nasturtium, dwarf Rocket, Larkspur, Bartonia aurea, dark Sweet William, Malope grandiflora, Kaulfussia amelloides, Sweet Peas, Marigolds, Chrysanthemums, and other interesting kinds. At the meeting of the Prince Consort's Royal Association, which took place the other day at Windsor, Messrs. Sutton exhibited upwards of two hundred varieties of annuals, cut from the grounds just alluded to, and which attracted much attention.

State of the Fruit Crops at Burghley.—On Apples there was a great deal of bloom, but it was light-coloured and weak; still we have a sprinkling. Our best varieties are Wellington, King of Pippins, Ribston Pippin, and Dutch Mignonne. Pears, both standards and wall trees, are a failure. The best sorts here—are Passe Colmar, Beurré d'Arenberg, Fondante d'Automne, and Glou Morceau. Plums are quite a failure. Green Gage, Princess of Wales, Victoria, and Prune Damsons, which have for nine seasons past given us full crops, are this year barren. Apricots are a good half crop; these have all been protected with nets. Peaches and Nectarines are also a good half crop on south walls, but on west walls there is not a fruit. The following Peaches are generally good, viz., Galande, Royal George, and Princess of Wales. The best Nectarines are Albert Victor, Elruge, and Victoria. Gooseberries are a first-class crop. The best sorts are Warrington, Whitesmith's, Crown Bob, and the small Champagne, for preserving. Currants of all three sorts are a good crop, and the same may be said of Nuts of all kinds. Strawberries have been really good: the best are Charles Napier, Amateur, President, and Sir Joseph Paxton. So prolific is Amateur that plants of it nine months old bear 170 fine fruit. Laxton's new Strawberry, Premier, promises to be good; it is exquisite in flavour, firm-fleshed, and particularly hardy. Raspberries are a good crop, both white and red; Prince of Wales is one of the very best both for dessert and preserving. Of Cherries we have none outside, but in a cold house they are all that could be wished.—R. Gilbert.

Large Photinia serrulata.—In Vol. XI. (p. 326) a specimen of this tree is alluded to. We have one here, a standard, 19 ft. in height and 22 ft. 6 in. in diameter. It has bloomed well this season; the late frost has injured the young shoots, but they are now recovering. It is the largest tree I have seen. Have any of your correspondents a larger one?—John D. Nauscawen, *Whiteway.*

Berkheya (Stobæa) purpurea.—This Cape Thistle is now in flower at Tooting, where it has been watched with considerable care, being still somewhat rare; the different kinds sometimes vary in colour from white to deep purple, but the variety now in bloom at Messrs. Rollisson's is very light purple. It is quite hardy, and will doubtless become a favourite both for rock-work and border decoration.—J. T. R.

AUDLEY END.

Audley End, the principal residence of Lord Braybrook, apart from its many objects of interest for the archæologist, the naturalist, and the student of history, is also well worth the notice of the horticulturist and the landscape gardener. The mansion itself, built by Thomas Howard, Earl of Suffolk, in 1816, stands on the site of a priory, founded by Geoffery de Mandeville, the first Earl of Essex, in 1136, and suppressed when an abbey by Henry VIII., and although even now of considerable dimensions and palatial in appearance, it is but a small portion of the original building, which is stated to have occupied a period of thirteen years in its erection, at a cost of £190,000, and in extent and splendour to have rivalled Hampton Court, which it also resembles in the character of its architecture.

In passing from the chief entrance to the mansion, many fine pictorial effects are observable, one of the best being the Lion Lodge and its accessories, situated south-west of the mansion. Near the east end of what is called the Joshua Bridge, and by which the Saffron Walden road crosses the Cam, is a remarkably fine specimen of the cut-leaved Alder, probably the largest of the kind in the kingdom; at a short distance from the western extremity of the same structure is also a grand mass, composed of groups of round-headed trees, chiefly Elms.

The west view of the mansion, as shown in our illustration, is very imposing, but owing to the naked and stiffly-defined edges of the river, and the barrenness of the widely-extended lawn (it is said to occupy a space of about 8 acres), a certain air of coldness prevails. On the south side the trees and shrubs have been made to produce agreeable effects, and a grand old Cedar of Lebanon is especially effective, whether viewed from the house or as seen with the house from the lawn at various points. On the east side is a very extensive geometric flower garden, arranged in excellent keeping with the style of the house, but unfortunately no really good view of it can be obtained excepting from the picture gallery, or the upper rooms. It ought to have been sunk to have done it full justice, and so viewed from a terrace; but in consequence of the low position of the house that idea was no doubt found to be impracticable. Some of the beds are furnished with a fine selection of hardy herbaceous plants, and the remainder with the choicer bedding kinds, and being bounded on the outskirts by irregularly-formed masses of evergreens enlivened by bright-foliaged deciduous shrubs such as the Variegated Negundo, &c., the effect produced will be rich, and free from that tawdry glare of colours usually the result of the ordinary system of bedding out.

Around the mansion the grounds are beautifully diversified by hill and dale, richly clad with picturesque groups and masses of noble timber, &c., enlivened also by the waters of the Cam and one of its tributaries, which unite in the park, presenting in numerous directions charming studies for the painter, and necessarily also subjects for the consideration of the landscape gardener. Prominent in the view eastward is a Grecian temple, erected to commemorate the restoration to health of George III. after his long illness. Of itself it may no doubt be esteemed a fine work of art, but considered in relation to the mansion and the thoroughly English character of the scene in which it stands, the effect of its presence is certainly incongruous. The same remarks are also equally applicable to the Joshua Bridge and the handsome Roman temple on the summit of Ring Hill, though perhaps in a less degree in the last instance, seeing that it occupies the site of an ancient Roman encampment. Ring Hill is the western boundary of the demesne, and from its summit is obtained a magnificent panoramic view of the mansion and its surroundings, also of the ancient and interesting town of Saffron Walden; and in the dense wood on the east side of the hill are some fine vistas.

The English Elm, of which there are many fine and distinct seminal varieties produced on the estate, is in great

Audley End.

luxuriance. The Beech, Oak, Ash, Horse Chestnut, Lime, &c., are well represented, though they are not so numerous. Of the Western or what is commonly called the London Plane, there are some fine specimens, and regarding them it is deserving of remark that they are generally on swampy ground, and in two or three instances where they are close to the river, their roots protrude into the water after the fashion of those of the Willow. In the park there appears to be a paucity of evergreen trees, and the introduction of a few Conifers, such as the Corsican Pine, &c., planted judiciously in large masses and groups would undoubtedly produce an excellent result, especially in winter. Evergreen shrubs are also comparatively rare, and limited as to variety; of the choicer kinds of the Holly hardly an example is to be seen, nor, indeed, of the ordinary green form, owing, I presume, to the character of the soil being unfavourable for their development. Of the English Yew and the Tree Box there is, however, an abundance in the neighbourhood of the mansion; and, indeed, they are the only two evergreen shrubs that appear to have escaped unhurt the effects of the frosts of 1860.

A specimen of a Black Hamburgh Vine, reported to be 100 years old, was particularly noteworthy in the early house, from its healthy, vigorous condition, and its finely-developed bunches; and certainly if it could be done, it would be well worth while devoting a house entirely for its accommodation, after the fashion of the treatment of that grand old Vine in the gardens of Eastnor Castle; I was also much pleased to witness in a late Vinery some good bunches of an old favourite —Oldaker's West's St. Peter's—which is deserving of more consideration than is usually accorded to it by Grape-growers, for when well grown it is one of the best of late-keeping varieties. In the Peach-houses at Audley End the trees were succeeding satisfactorily, and one variety, the Early York, was producing an abundant crop of well-developed fruit.

In the stoves and greenhouses are many fine specimens of fashionable plants, both for table and general decorative purposes, and ample provision is also made for the supply of cut flowers. What is called the fish-pond garden came next under notice, and upon its walls appeared, among many other suitable wall shrubs and climbers, a specimen of a fine old evergreen Rose (Maria Leonida), now rarely seen; and in one of the ponds or basins are thriving examples of Richardia æthiopica and Aponogeton distachyon. The chief feature, however, in this department is a piece of artificial rockwork by Pulham, which, although it may not harmonise happily with its surroundings, nor yet, as an imitation, meet the requirements of a geologist, produces a pleasing effect; the blocks, from long exposure, are weather-stained and mossy, and the crevices are filled with the true Shamrock (Oxalis Acetosella), Cotyledon umbilicus, and the smaller-growing Ferns, &c. Overhanging are wide-spreading branches of the English Yew, and the recesses and various of the more salient points are occupied by fine specimens of hardy Ferns and shrubs, such as Berberis Darwini, &c., arranged and planted by some one who evidently had studied natural, or, in other words, true artistic effects.

The kitchen garden, despite the damage inflicted by the frosts of last spring, especially the one of May 4, when the thermometer registered 14°, is well cropped; but fruit here as well as elsewhere is a failure, with the exception of the following Pears, which promise to yield a fair average crop:—Ne Plus Meuris, Beurré Rose, Beurré Rance, Bergamotte d'Espéren, and Glou Morceau. Of Apples, there is just a slight scattering, but of Filberts the crop will be plentiful. Plums are a total failure, and of bush fruits the supply will be limited. Peaches, Nectarines, and Apricots on the walls are in this, as they have been in many former seasons, more or less a failure, and unless recourse be had to some radical measure—for example, the entire removal of the Peach walls to a higher part of the ground where there is a soil of a better quality and an atmosphere less influenced by late spring and early autumn frosts—the young trees now in course of preparation to replace them will suffer a similar fate. The site of the principal kitchen garden is low and perhaps for successful cultural purposes little more than sufficiently above the natural level of the Cam or Granta which runs close by, and the soil is of a light description, resting upon a gravelly substratum. It would appear that the celebrated Brown, or a close imitator of his style, to produce an improvement in the landscape on the west side of the house, raised the river 7 ft. or 8 ft. above its natural level by means of a dam; and although it may be a moot point whether the result is in an artistic sense an improvement or otherwise, it certainly, so far as the garden is concerned, has proved the opposite of a benefit; and further, it is questionable if the sanitary conditions of the locality have not also thereby been of some extent injuriously affected. The wall occupied by the Peach trees just alluded to seems to have been built in 1811, and is furnished with flues which for very many years have been disused. Instances of flued walls seldom now occur, but heated walls without glass might, I think, be re-introduced with advantage into many places, for I well remember an old decayed garden in the north of England surrounded by flued walls; and I recollect also reading in the "Transactions of the Horticultural Society," when Andrew Knight was president, of first-class prizes being won by Peaches and Nectarines grown on these walls and exhibited at the Society's shows; and further I can call to mind being told by cotemporaries of the grower of those fruits that by the end of October the wood of the trees was generally well ripened and the leaves fallen—a result not often witnessed now-a-days on similar trees on the open wall.

G. T.

Green Roses.—These are not such rarities as they are supposed to be. I have had a green Rose tree for nearly thirty years, and I fancy there must be more than one kind of green Rose—mine is certainly a monstrous form of the old China or Monthly Rose, in which the stamens, pistils, and petals seem to have a peculiar tendency to revert to the bracts or divisions of the calyx. The sport or reversion is, however, fixed, as I have never known it to vary. A green Rose has a strange sound, but the possession of it creates more wonder than satisfaction. I have also a very old Rose called Celestial, the blooms of which are delicate pink with a bright rosy centre, and very sweet-scented. It is of an arborescent habit, a prodigious bloomer, and the buds are simply beautiful.—THOMAS WILLIAMS, *Ormskirk.*

Anomatheca cruenta.—Allow me to say a word on behalf of this pretty little plant. A few years ago I purchased a few bulbs of it for a pot, and after they had flowered I turned them out into a London back garden which gets no sun for six months in the year, and where all but the hardiest subjects succumb to the damp and cold of winter. The Anomatheca seems, however, to be proof against all such adverse influences, for it has come up and flowered each succeeding year in increasing quantity, and seems likely to spread to an indefinite extent if permitted to do so. Should it be unknown to any of your readers, I may add that it is a small Cape Irid, which throws up slender spikes of flowers from 9 in. to 1 ft. in height, each flower consisting of a slender tube, and flat limb of six oval rosy or salmon-red segments, the three lower of which are marked at the base with a deep blood-red spot, which gives the flower a very distinct appearance.—R. C., *Kensington.*

Birds' Nests in Hothouses.—A similar case to that recorded in THE GARDEN (see p. 498, Vol. XI.), has come under my notice. In the spring of 1876 a robin found access to our plant stove, and there built its nest in a specimen Fern (Nephrolepis exaltata); eggs were laid, and in due time young birds hatched. In March last the same robin again entered the stove, but on this occasion a higher position was chosen for its nest, which was built in a suspended basket planted with Maiden-hair Fern; here were hatched three young robins, which remained in the house three or four days after leaving the nest, when they escaped from their glass cage either by the ventilators or through the small hole by which the parents found access. I saw no more of my companions until the latter part of May, when the industrious parents again returned to the stove, and built another nest in the same basket, and succeeded in rearing another brood, which are now (July 10) flying about the stove, as if waiting for a change of weather before leaving the hot climate. The two empty nests still remain in the basket.—J. F. HART, *Birt Castle, Parsonstown, Ireland.*

A Raft for Water Plants.—We have floating in the water here a mass of Myosotis palustris upon a raft about 16 ft. in circumference. The Myosotis has been in flower for the last six weeks, and is likely to last six more. The board rises and falls with the water. The Forget-Me-Not is quite established, seeding year after year, and improving each year in its growth. Why should it not be called the "Rollisson Raft?"—W. ROLLISSON & SON, *Tooting.*

HEATED PLANT-CASES.

By BOVERTON REDWOOD, F.C.S.

There are few domestic occupations for the leisure hour more deserving of encouragement than the cultivation of plants in the dwelling house, and there is probably no one who has so much contributed to the successful prosecution of this pursuit as the late Mr. N. B. Ward, F.R.S. The Wardian Case has, in fact, long since become a common article of furniture, and it may safely be asserted that as much real pleasure and instruction are often afforded by these miniature greenhouses as by vastly more ambitious structures. The number of plants which may be satisfactorily grown in an ordinary closed case is far from small; but the enthusiast will certainly wish to add to his collection some of the very beautiful forms of vegetable life to be found among the tropical Ferns, Orchids, and so-called fine-foliaged plants. The gratification of this desire will render it necessary that some arrangement be provided for warming the little greenhouse and transforming it into a small stove or hothouse. Hitherto heated plant-cases have not been largely made and sold, though various forms have been from time to time devised; but there can be no question that their use will be much extended as the advantages they offer in the cultivation even of such plants as are now grown in the ordinary Wardian Case become more appreciated. At the present time the choice of ready-made plant-cases with heating apparatus is limited, and the critical in such matters will probably prefer to construct their own, in order to consult their individual tastes on various points of detail. It is with a view of assisting those who have reached this conclusion that the following description has been penned. The arrangement set forth has been practically tested by the writer with most satisfactory results, and a strict adherence to the dimensions given may, on this ground, be recommended: but it will be obvious that in these and many other particulars deviations may be made to suit individual circumstances, without necessarily impairing in any way the efficiency of the whole.

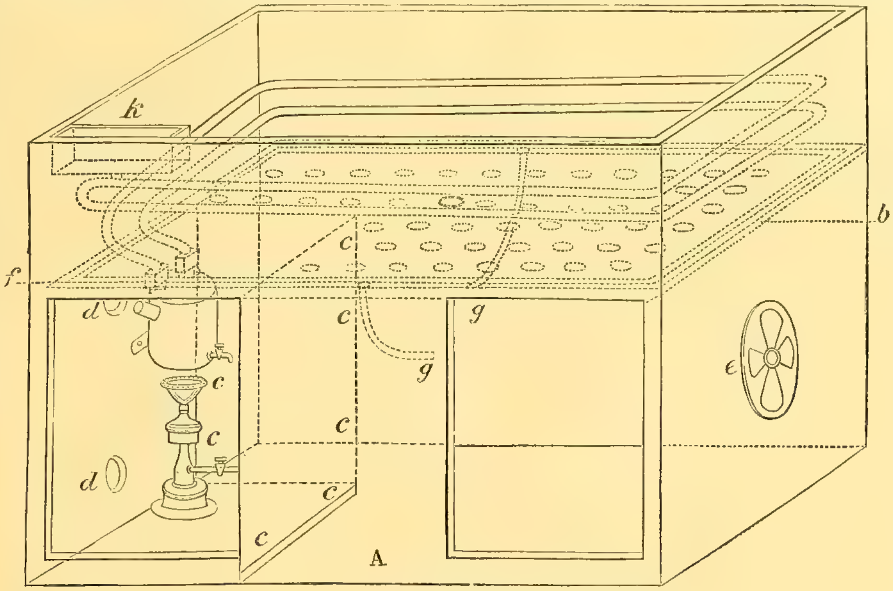

Fig. 2.—Box, with heating apparatus and false bottom.

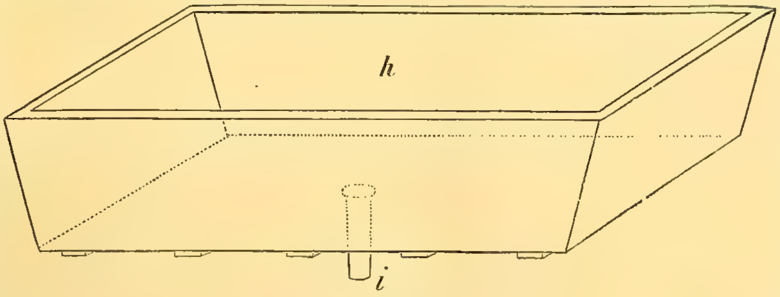

Fig 2 (*h*).—Receptacle for the soil.

Fig. 2 (A) represents a rectangular box, 3 ft. 5 in. in length, 2 ft. in breadth, and 2 ft. 5 in. in depth—all external dimensions. This box, which should be of 1-in. well-seasoned deal, strongly dovetailed together, is provided with a false bottom (*b*) securely fixed, so that its upper surface is 9½ in. from the top of the box. In what may be termed the front of the box, two doorways are cut, as shown in the figure, each 15½ in. high and 12½ in. wide. The doors for these openings are provided with two projecting studs fitting into corresponding depressions where hinges would ordinarily be placed; the reason for which arrangement will presently be obvious. Between the true and false bottoms of the box two partitions (*c c*) are fixed, as shown by the dotted lines, at 12 in. and 13½ in. respectively from the front and left-hand (as the reader looks at the figure) end of the box, thus forming a chamber of these dimensions as to depth and breadth, and of 17 in. in height. This chamber is for the reception of the heating apparatus, and it it essential that air-communication between it and the rest of the box be entirely prevented by caulking all the joints and angles with a mixture of red and white lead with linseed oil, and by screwing over them slips of wood with the interposition of felt smeared with the same compound. Two holes (*d d*), 2½ in. in diameter, are bored through the left-hand end of the box at the top and bottom of the apparatus chamber, so as to provide for the ingress and egress of air to and from the source of heat. At the opposite end of the box a circular orifice, 9 in. in diameter, is cut, equidistant from the sides and bottoms, and is provided with a circular zinc ventilator of the ordinary form, having a button in the centre, by means of which the openings in the outer plate may be wholly or partially covered by the under plate. A number of 1½-in. holes are bored through the false bottom, say 2 in. apart, omitting that portion which forms the roof of the heating apparatus chamber. At a distance of ½ in. from the front, back, and sides of the box, a continuous strip of wood, ½ in. in thickness, is screwed to the upper surface of the false bottom, with the interposition of stout flannel or felt smeared with the red and white lead mixture, so as to form a water-tight channel or gutter (*f*); and in this channel two holes are bored through the false bottom, into which pieces of ⅜-in. composition tubing (*g g*) are fitted, so as to convey any water from the channel into a pan to be placed in that portion of the box communicated with by the right-hand door. These holes may be at the back and front of the box and midway between the ends, and the composition pipes may be bent as shown by the dotted lines so as both to deliver into the same pan. Fig. 2 (*h*) represents the receptacle for the soil, consisting of a trough or deep tray 3 ft. 1 in. in length by 1 ft. 8 in. in width (both outside measurements at the top), and 9 in. in depth (outside), the sides tapering somewhat towards the bottom. This trough should be strongly made of ¾-in. deal, lined with thin sheet lead or stout zinc, and the bottom should be perforated to receive a piece of 1-in. lead pipe (*i*), which passes through the false bottom of the box when the trough is placed in its position, and delivers into the pan already mentioned. Over the inlet of this pipe an inverted saucer of perforated zinc is placed to act as a drainer. Across the bottom of the trough outside, several strips of wood, ½ in. in thickness, are nailed, so as to form a bearing and to admit of air freely passing under the trough from the orifices in the false bottom of the box. The trough is not shown *in situ*, in order to simplify the figure; but it will be obvious from a consideration of its dimensions that when resting upon the false bottom of the box there will be a space surrounding it 1 in. wide at the top (the space increasing towards the bottom in consequence of the tapering of the sides) through which the heated air from the hotwater pipes, presently to be described, can freely ascend. This air-space being in communication, through the perforations in the false bottom, with the larger chamber on the right-hand side of the box, it follows that the ventilator already mentioned affords a means of regulating the air current passing over the pipes. For the sake of appearance a strip of perforated zinc with large apertures may be fixed over the space between the trough and the sides of the box.

The heating apparatus should now receive attention. Fig. 3 represents the boiler, which is of stout sheet copper, 4½ in. in diameter by 5 in. in height, and provided with a flue (*a a*) tapering from about 2 in. in diameter at the lower end to about 1 in. at the upper. The boiler is fitted with two unions (*b c*) at the top, one of which (*c*) carries a piece of 1-in. pipe (*d*) passing nearly to the bottom, and a small tap (*e*) is placed at the lowest point to draw off the water when required. A copper strap (*f f*), soldered to the boiler, serves to fix it to the side, or preferably in the angle of the apparatus chamber, and it should be placed as close to the roof as is convenient, in order to leave as much room as possible beneath for the lamp. The boiler may advantageously be provided with a well-fitting felt jacket to check the radiation of heat from its surface. In fixing the boiler, the orifice of the flue should be turned towards the upper hole in the end of the box, so that an elbow may be fitted on, if desired, to convey away the products of combustion. From the union *(b)* a piece of 1-in. lead pipe passes through the false bottom, along the left-hand end and so round the case, as shown in fig. 2, until it reaches the left-hand side of the front, gradually rising as it goes until it is 3 in. or 4 in. from the top. Here it is doubly bent and it passes back beneath the first coil, finally re-entering the apparatus chamber, and being connected with the union (*c*). Thus is provided a flow and return pipe altogether about 19 ft. in length, and having between 4 and 5 square ft. of heating surface. The openings through which the coil passes through the false bottom must be carefully caulked to make them air-tight, and in attaching the coil to the sides of the box thin strips of wood should be interposed to keep the pipes from contact with the sides. Into the highest point of the coil one end of a short piece of ¼-in. composition tube is soldered, the other end being similarly attached to the bottom of the small water-tank (*k*), which is fixed to the side of the box so that the tops are flush. This tank may be 8 in. long by 1 in. wide, and 2½ in. in depth.

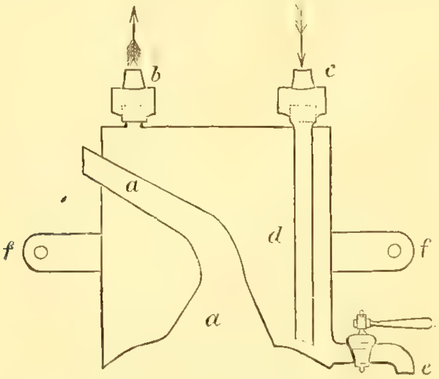

Fig. 3.—Section of Boiler.

As a source of heat the writer would recommend gas, where it is laid on, and in many cases the supply pipe may be conveniently brought through the floor of the room, and directly through the bottom of the case to the burner. In the selection of the burner something will depend upon the locality as influencing the general temperature of the apartment, and upon the extent to which the room is used. In a cold room, that is to say, a room where there is seldom a fire, and in a cold locality it will be best to have a ring burner, 2 in. in diameter, pierced with a dozen holes. This, placed at a distance of 1 in. from the bottom of the boiler, will give abundance of heat in the coldest weather. Of course where little heat is wanted the ring burner may still be used and the gas supply checked to the necessary extent, but in such cases it will be found that an ordinary steatite fish-tail or bat's-wing burner turned down low is more convenient. And here we come to the consideration of a most important question. Shall we make the regulation of the gas, and consequently of the heat of the case, automatic, or not? Some there are who are ready to affirm that it is quite useless to attempt the heating of so small a structure unless an automatic regulator be provided, and they confidently predict the freezing or frying of the contents as a necessary consequence. The experience of the writer is, however, entirely opposed to this view. With the heating apparatus already described he has found no difficulty in regulating the temperature without the use of any automatic apparatus, even when the case has been left for days unattended to. Of course violent fluctuations in the temperature out-of-doors will produce alterations within the plant-case, but not nearly to the same extent as if the case were in the open air; and if anything like daily attention can be given, even for a couple of minutes, these fluctuations can be easily counteracted after a little experience. Besides which it is not as if the temperature were the only point requiring attention; the ventilation of the case is an equally important matter, and inasmuch as the rate of passage of the heated air through the openings provided depends upon the difference of the temperatures of the air inside and outside the case, it follows that whenever the heat is increased under the boiler the ventilator openings should be decreased, unless one desires to expedite the ventilation, as for instance in damp weather or in winter, when the case is required to be kept freer from moisture. The only kind of regulator

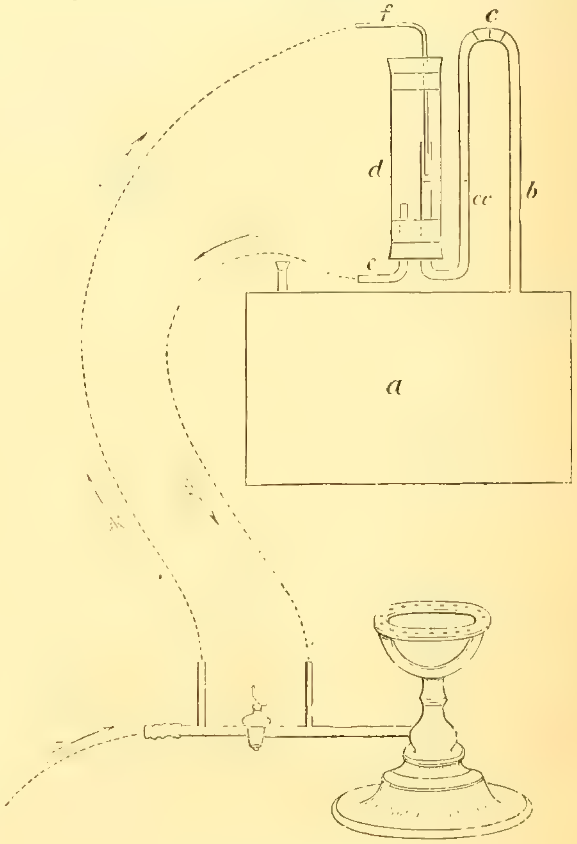

Fig. 4.—Automatic Heat-regulator.

which the writer would recommend is Sugg's Governor, which is useful in keeping the pressure of gas uniform. This little apparatus is now commonly attached to the street lamps, and may be procured for a few shillings. The pattern selected should be that which admits of adjustment for any desired rate of consumption of gas, however small. The governor screws on to the cast-iron pedestal of the lamp beneath the burner. In case, however, the reader should prefer to have an automatic heat-regulator, the following description of a suitable arrangement is given. Fig. 4 *(a)* is a water-tight box of thin sheet zinc, 6 in. long by 4 in. deep and 1 in. wide. Into the top of this box is soldered a brass tube *(b)*, about $\frac{1}{4}$ in. in internal diameter, bent at right angles at about 6 in. or 7 in. from the box, and terminating at *(c)*, where it is connected by a piece of india-rubber tubing with a glass tube *(c c)* of the same diameter and bent as shown in the figure. Over the tube (*c c*) is fitted by means of a cork a larger tube (*d*), about 1 in. in diameter and 5 in. or 6 in. in length, and through the same cork is passed a tube (*e*) bent once at a right angle. The upper end of the large tube is also closed by a cork which carries a glass tube *(f)*, bent once at a right angle, and sufficiently small to pass loosely into the tube *(c c)*. The metal box and tube are filled with water (boiled to expel air), and the upper part of the tube (*c c*) is similarly filled. The lower part of the tube (*c c*) is filled with mercury, care being taken that there is no air between the mercury and the water, and no water above the mercury in that limb of (*c c*) into which the tube (*f*) passes. The apparatus is placed in the plant-case at the temperature which it is desired to maintain, and left there until the water ceases to expand under the influence of the heat, and drive the mercury forward. The tube *(f)* is then adjusted so that its orifice is only just closed by the mercury. The apparatus may stand upon the hot-water pipes at the end of the case, where it will be less unsightly than elsewhere, but under these circumstances it will maintain a uniform heat in the pipes rather than in the atmosphere of the case. For use with this regulator the gas burner will require to have two small tubes soldered into the supply pipe, one on each side of a small tap as shown in fig. 4. These tubes are to be connected with the tubes *(e)* and *(f)* of the regulator, and for this purpose it will be convenient to fix, air-tight in the roof of the apparatus chamber, two small tubes close to the end of the case, the connections with these being made with india-rubber tubing. The action of the apparatus will now be seen. The tap of the gas burner between the two small tubes should be turned on only so much as to give a supply insufficient to provide enough heat, and indeed the only use of this "by-pass" is to prevent the extinguishing of the gas by the action of the regulator. As the temperature of the air in the case falls, the water in the metal box contracts, the mercury recedes, the orifice of the tube (*f*) is uncovered, and gas passes through it, up the annular space between (*f*) and (*c c*), into the large tube (*d*), through the tube (*e*), and so to the burner, which it continues to supply until the increased size of the flame has so much raised the temperature of the case that the expansion of the water in the box has again, through the medium of the mercury, closed the orifice of the tube (*f*), and stopped its passage. Where gas cannot be used for heating, the best substitute is a mineral oil lamp, with a flat wick $\frac{5}{8}$ in. in width, provided with a chimney of metal and talc, and having a shallow oil reservoir of large diameter. The lamp should be fed with "water-white petroleum oil."

The decoration of the case should now be proceeded with, in order that the inelegant deal box depicted in fig. 2 may be converted into the handsome pedestal represented in fig. 1. Three mouldings should be provided. The upper one may be about 1 in. in width, and should be put on so that its edge is about $\frac{1}{8}$ in. above the top of the box, and it will be well for the top of the box itself to be slightly bevelled, so that its inner edge is somewhat the lower. This will prevent any accumulation of the water which may be condensed on the glass. The middle moulding may be about 2 in. in width, and it should be about 2 in. in thickness at its lower edge, which should be 7 in. from the top of the box. The lower moulding at the bottom of the box should be somewhat bolder than the middle one. The surface of the box, including the doors, comprised between the middle and the lower moulding, should be covered with virgin cork, broken into small pieces for convenience of fitting, and fastened on with French nails. Upon the care which is expended in this operation the appearance of the case when finished will largely depend, and whatever else is entrusted to the workman, the writer would recommend this being done by the amateur. It is more a question of patience than of skill, though a prolonged study of the Chinese puzzles of our infancy would be a fit preparation for the task. A $\frac{1}{2}$-cwt. bale of the cork will be more than enough, and will permit of the rejection of the less suitable pieces. It will now be seen why the doors of the pedestal are not hung on hinges, for of course, if they were, being covered with cork, they would not open unless an unsightly blank were left. By the method of fitting recommended, the joint may be made so neatly that the doors are almost invisible, and they require no fastening to keep them shut. The cork surface should be sized and well varnished, and the woodwork may be painted a dark olive-green and bronzed or ebonised and the mouldings gilt.

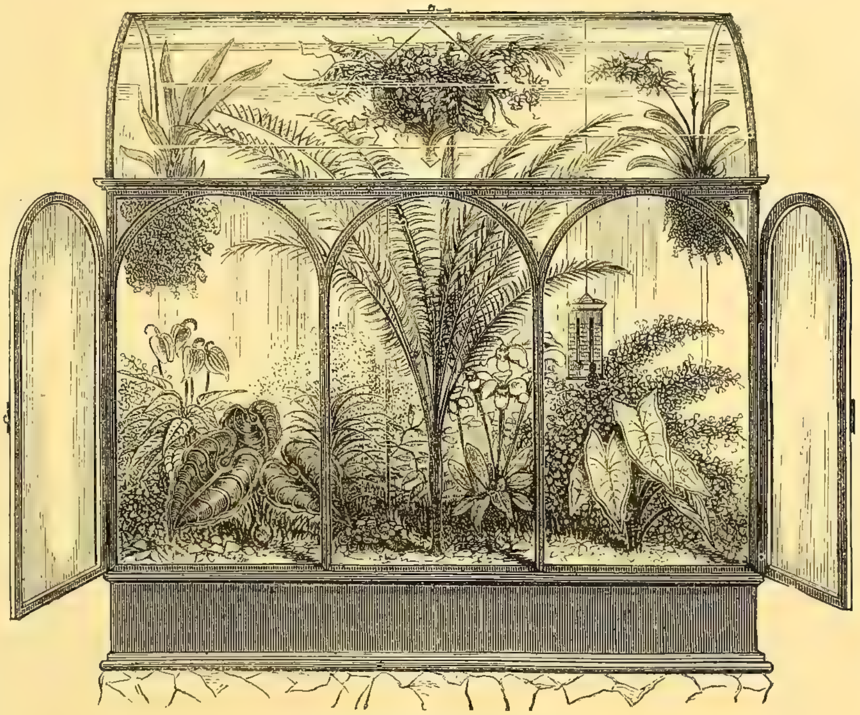

Fig. 1.—Heated Plant-case (open).

The quondam plain deal box will now present the appearance of a receptacle for the soil, resting on a handsome solid pedestal, and is ready to receive the glass superstructure. This part should be made by a specialist accustomed to the work, and there is some room for difference of opinion as to its form. The arrangement shown in fig. 1 is convenient, the two doors in front affording easy access to the contents; but a simple sheet of glass for the front and back, with the ends to open as doors may be considered by some to have a better appearance. Whether the doors are at the ends or in front, they must fit well. The curved top, though more costly, is worth the extra price. On the summit is the ventilator, consisting of two strips of glass sliding in a groove 1 in. in width and slightly overlapping in the centre when the ventilator is closed. By sliding them over each other to a greater or less extent, corresponding openings for the escape of the heated air are left at the ends of the groove. The glass case should have a strong wire passing from end to end beneath the ventilator for the support of hanging baskets, and another wire should be stretched across each end on a level with the tops of the doors. The following dimensions will be found suitable, and a structure of this size, made of stout glass and strong zinc angle bar (which should be painted to match the pedestal) will not be too heavy to be easily lifted on and off by two persons:—Length, 3 ft. 4 in.; breadth, 1 ft. 11 in.; height to top of doors, 2 ft.: total height, 2 ft. 11 in.

The selection of a suitable position for the case will probably have been made before its construction was commenced. As to aspect, much will depend upon the character of the plants to be cultivated. Plants with brilliantly coloured foliage and most flowers, cannot, it is well known, be grown to advantage without strong light; and, on the other hand, Ferns will not thrive if exposed to sunshine. A sunny spot may, of course, be shaded, but this precaution may on some occasion be neglected, to the injury of the occupants of the case, and it will therefore probably be the wisest course to choose a northern aspect where possible. It has been already mentioned that the orifice of the flue of the boiler should be turned to the opening in the end of the box so that an elbow may be applied to carry off the products of combustion. This is not a necessity, but where convenient it would certainly be well to adopt it, and the elbow should preferably pass through the wall or window-frame and terminate in the open air.

The construction of the plant-case having been completed, and the little boiler with its circulating pipes filled with water, heat may be applied, and the bed of soil prepared for the reception of the plants. Covering the bottom of the trough should be a layer of potsherds at least 2 in. deep, the largest fragments at the bottom, and with these may be advantageously mixed some pieces of charcoal; over this layer should be placed a stratum of dried Moss to prevent the earth from passing into and choking the drainage; and lastly, the trough should be filled to within 1 in. of the top with the compost, which may consist of good fibrous peat mixed with plenty of silver sand, to which may be added loam when planting those subjects which require it. The surface of the soil may be diversified by the formation of slight hills and dales, and by placing here and there, half-embedded, a few fragments of porous stone. The earth should then be thoroughly saturated with boiling water, which will destroy any animal or vegetable life present in it, and next day the case will be ready for the plants.

On the subject of stocking the case, the writer proposes to suggest little beyond giving the names of various plants which he has practically found to succeed well. In planting a case, as in laying out a garden, written descriptions are of little use, and almost everything must be left to the taste of the operator. Nevertheless, a few general hints may be of service. It is well to line, as it were, the ends and back of the case with tall-growing Ferns, so as to form a good dense background of verdure, but uniformity of height in the plants thus arranged must be avoided, so as not to produce anything approaching to a straight line. In the rest of the case, marked contrasts as to height and form should be aimed at, and a few distinct plants springing from a carpet of dwarf plants will be more effective than a number nearer alike in character. Above all things, a crowd of plants should be avoided, and room should be given to each to develop and display its beauties of form—all large-growing plants being thus necessarily excluded from a case of the dimensions given, unless one is prepared to keep them only so long as they remain in a small state. Again, no supporting or training of the plants is admissible, for it is essential that they should appear to be growing quite naturally. Passing from generalities, the following arrangement is given as one which will be found to afford satisfaction. As a background Pteris serrulata cristata, P. s. angustata, and Adiantum affine. In the centre of the case a well-grown Palm—say Areca lutescens. At the ends of the case, A. assimile, A. cuneatum, A concinnum latum, A. Sanctæ Catherinæ, and Cheilanthes elegans. Difficulty is sometimes experienced in the management of some of the large-fronded Adiantums, especially in the winter, but the writer has found A. Sanctæ Catherinæ to thrive well in the heated case. The very beautiful A. macrophyllum cannot, unfortunately, be recommended for the purpose, though it may be preserved in good condition through the summer. Towards the front of the case may be planted the graceful Asplenium viviparum; right and left of the Palm, Maranta rosea picta, M. Makoyana, M. chimboracensis, and a small plant of Alocasia metallica, the splendid foliage of the Marantas and Alocasias contrasting well with the Ferns. A. metallica will soon grow too large, but not before it has well paid for the trouble of its removal. Space should be preserved for a plant of Anthurium Scherzerianum, which will thrive and produce its brilliant spathes with a little care. A specimen may also be added of the New Holland Pitcher-plant (Cephalotus follicularis), and of the interesting little Venus' Fly-trap (Dionæa muscipula), though the writer has found it impossible to preserve the latter in an active condition—probably in consequence of its receiving insufficient light. If possible, room should be found for at least one species of Cypripedium, say C. insigne, C. barbatum, or C. niveum. The pretty little Fittonia argyroneura, F. Pearcei, and F. Verschaffelti are also useful for filling nooks. All vacant spaces should be carpeted with the common Selaginella, the beautiful blue S. cæsia, and the compact S. apoda, and a small plant or two of Tradescantia zebrina and Cyrtodeira fulgida may be added. From the top and sides of the case should be hung a few Orchids in baskets, which will succeed well without more care and attention than they require in the Orchid-house. It will be found in all cases that the cooler-growing Oncids do remarkably well, and, in fact, the writer has had blossoms of Oncidium flexuosum as good as could be wished for produced in the plant-case. A further selection may be made from the various species of Lycaste and Odontoglossum, and those who admire its blossoms may add a plant of Sophronitis grandiflora, which is best grown on a small block. In addition to the Orchids (which may be advantageously planted in home-made baskets of virgin cork), plants of Æschynanthus fulgens, Panicum variegatum, and Tradescantia zebrina may be suspended from the upper part of the case. Isolepis gracilis cannot be recommended for this purpose, as it is difficult to keep it sufficiently well watered. The arrangement thus sketched out may of course be modified in all cases by the substitution of many other Ferns for those named, as for instance, Phlebodium aureum (selecting a small specimen), Pteris cretica albo-lineata, Gymnogramma chrysophylla, &c., and by replacing the Marantas by Caladiums or by variegated-foliaged Begonias; but although such Caladiums as C. Chantini and C. argyrites brighten up the case wonderfully, they possess the great objection that their places are necessarily blank during the winter, and, in fact, no deciduous plants can be altogether recommended as suitable for the case. Again, the Areca lutescens may be replaced by a Dracæna or by a different species of Palm, and by none better than Cocos Weddelliana, if expense be no consideration.

Those who have had no experience in the indoor cultivation of plants may be glad of a few suggestions as to the management of the case. The temperature at which it is kept may, for such a collection as that described, be, during the summer, about 70° Fahr. in the day, and somewhat less at night—the gas remaining at the same height, the decrease in temperature of the room will do all that is needed in diminishing the heat. It may be objected that the most fitting temperature for the cultivation of the Marantas, Caladiums, and other fine-foliaged plants enumerated is somewhat higher than that which would be recommended for some of the Ferns with which they are associated; this, however, is an evil inseparable from every mixed collection, whether in a house or case, and it will be found that the intermediate temperature specified will sufficiently meet the requirements of both classes of plants. During the early part of the summer, when the plants are making new growth, ventilation should be carefully attended to, so that the atmosphere may not become unduly dry; and it will be found advantageous to have two or three small water-tanks, made of sheet zinc, about 4 in. long by 1 in. wide, and of such depth that when resting on the hot-water pipes their tops are level with the top of the trough containing the soil. These tanks are to be filled with water, which by its evaporation will keep the atmosphere of the case charged with moisture. In addition to a dry-bulb thermometer hanging in the case to indicate the temperature it will be well to have a wet bulb thermometer in the same frame, the two constituting a hygrometer, and in the summer there should not be at any time a difference of more than 2°, or at most 3°, between the readings of the two thermometers, while the nearer the indications are the better. While striving to maintain a sufficiently humid atmosphere, the operator must see that enough ventilation takes place at the same time, or the Orchids and some of the other plants will suffer. This is regulated, as already described, by the revolving ventilator at the end of the base or pedestal, and by the glass slides on the top of the case. There is, however, more danger with a heated case of having too much ventilation than too little, and in fact it will sometimes be found necessary to cover the glass slides with a strip of felt to further check the escape of air through the crevices. The condition of the glass will afford some criterion as to the state of the air; the surface should not be quite dry, but need not be allowed to become so much bedewed with moisture as to obscure the contents of the case. The watering of the plants (with the exception of those in baskets) will not require to be very frequently attended to, in consequence of the large bulk of the soil; once a week will usually be as often as it is required (though some of the plants will enjoy a more frequent dose if the drainage be good), except round the edge, where the contiguity of the pipes causes more rapid desiccation. Of course the supply of water to the little tank of the hot-water apparatus must not be neglected, and it will be well to have a slip of glass to act as a cover and check evaporation, when the tank will not require filling so frequently. In winter the temperature of the case may be allowed to fall to 50° or 60° Fahr., and the atmosphere, as well as the soil, should be kept drier by somewhat freer ventilation and less frequent watering.

Keeping Cut' Flowers Fresh.—With regard to the length of time during which cut blooms will remain fresh, much depends on the manner and at what time they are collected. Flowers should, if possible, never be cut during the heat of the day, but of all things avoid doing so in sunshine, as they droop almost at once, and even if they regain their freshness when placed in water, it lasts but a short time. Flowers should always be cut with a sharp knife, not with a pair of scissors, and the stems should be severed in a slanting direction; the advantage of doing so is that when the little vessels of the stem are cleanly cut, they draw up moisture freely, which keeps the flowers fresh; but if bruised, absorption is stopped, or at least impeded. The water in which flowers are arranged should be changed every alternate day, if not daily, and the stems of the flowers should be cut afresh.—Annie Hassard.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Brahea filamentosa.—Amongst recently-introduced Palms, few surpass in usefulness and attractiveness this Brahea. Its leaves, which are palmatifid, are thickly beset with whitish filaments which enhance their beauty. It succeeds well in a greenhouse, and cannot fail, when better known, to find favour with cultivators of ornamental-foliaged plants.—S.

Hemlock Leaves and their Uses.—Permit me to direct attention to the usefulness of the leaves of Hemlock for decorative purposes; small leaves of this plant have a pretty light Fern-like appearance when interspersed amongst flowers in a vase. The foliage of this plant when growing in dry sunny spots assumes a crimson-brown tint, which for the decoration of light-coloured fruits is very effective.—A. Hassard.

Panicum variegatum.—Where indoor decoration has to be provided, plants of a trailing or pendulous habit of growth are necessary for furnishing the edges of jardinettes or stands, and this is an invaluable plant for the purpose, its habit of growth and beautiful variegation being in every way perfect. I insert three cuttings in a small pot, and, as soon as they get a few inches long, peg them down close on the soil, when they throw out a number of side shoots and form excellent plants without any further training.—J. Groom, *Henham.*

THE FRUIT GARDEN.

FRUIT TREE BORDERS AND WALLS.

With regard to fruit tree borders, very much must be allowed for climate and situation in considering such matters as soil, depth of border, manures, &c. It is comparatively easy to find a soil in which the trees will grow freely enough, but getting them to ripen their wood sufficiently is another matter. In some parts of the south of England—in Gloucestershire, for example—I could name gardens where all the fruit trees, both on the walls and open borders, are growing in pure loam of a strong texture. The loam was carted from the fields and chopped up, and the borders were made with as much care as is usually bestowed upon Vine borders. The trees did well; they were planted more than twenty years ago, and they are now fine specimens, and have always borne famous crops; but was it the soil that accomplished this? Certainly not altogether. It was the climate more than anything else, as was evidenced in every orchard in the district, though the well-prepared borders and the culture got, perhaps, the largest share of credit in the matter. No doubt a good deal was due to good management; but neither that nor the soil would have accomplished the same results in the more northern parts of the kingdom, or in any late and cold locality. I have seen quite as much pains taken in the formation of borders—a fertile soil used, and everything done that skill could suggest; but the experiment was carried out some 500 miles further north, and in a damp climate, and the results were very different. The trees grew and flourished in the well-prepared borders, or rather they grew too much; but, having neither the temperature nor the light that favours the southern counties of England, they did not mature their wood, and were consequently but indifferently productive. If you have a good fruit-producing climate, any ordinarily good garden soil of which the staple is a fair loam will produce fine fruit of Apples, Pears, or stone fruits, and the richer the soil is the better after the trees acquire age; but the same treatment will not do when the climate is unfavourable. In wet and late districts it is neither advisable to make the borders deep nor rich. Where growth does not begin till near May, or the middle of that month, and is apt to be prolonged till November, it must be clear, I think, that shallow and not over-rich borders, comparatively, and particularly for stone fruits, are best. Shallow borders answer quickly to the sun's heat, and, if not too rich, they produce moderately strong wood that ripens in good time. I am satisfied that strong wood, such even as some people would call gross, produces the largest fruit and the greatest weight of it, but only when it is matured to the core, which cannot be accomplished in the north as a rule. No general advice can be offered, therefore, on the subject of fruit tree borders that would be applicable everywhere in this country. In late, and particularly in wet districts, 2 ft. of soil is enough for Apples and Pears; and for Plums, Peaches, and Apricots, 18 in. will be ample; while in the south, where it is dry and warm, from 3 ft. to 4 ft. is not too much, but this is possibly the limit anywhere in this country. Everyone, therefore, who contemplates planting fruit trees, should be guided by these considerations. As regards soil, the Apple and Pear will thrive in very different soils; but they prefer a good loam, and if marly or calcareous all the better. It is not necessary to pave the bottoms of the borders, for it hardly pays; but when the subsoil is soft and clayey it must be thoroughly well rammed with a heavy wooden rammer, which will prevent the roots getting down. In renovating old fruit tree borders which are poor and exhausted, the ground should be trenched and enriched with fresh loam and rotten cow manure; the first alone, if used in sufficient quantity, is best, and the ramming of the bottom should be done at every trench as the work proceeds, and the work should be done early in autumn, to permit planting in November. For the Peach, Apricot, and Plum—in fact, for all the stone fruits—a strong but not in the least tenacious soil, of a rather calcareous texture, is the most suitable; but I must say I never knew any of the species to fail in a soil that produced general good crops of vegetables, provided the trees were intelligently trained and cared for, and the climate suited them. Under all circumstances, however, the bottom of the border should be paved or well rammed and rendered impenetrable to the roots, for stone fruits are soon rendered unfruitful, and sometimes ruined, by the roots getting into the moist subsoil, causing gumming and all its attendant evils. In preparing the border, the soil should be trenched and enriched in the usual way with good fresh loam if needful, but afterwards it may be allowed to settle down into a hard mass that will bear treading on with the feet. There is no doubt about stone fruits preferring a hard soil to all others; but it is necessary that such borders be mulched during the summer, for the trees are as easily ruined by drought at the roots as anything else. Almost the only point that can be urged about walls is that they should be high enough—much higher than they are usually built; and this advice is particularly offered to villa gardeners and those who have small gardens with low walls. I doubt if many good examples of culture from low walls—that is, walls under 12 ft. in height—could be furnished. According to my experience, the trees are at the top of such low structures in no time, and then they have to be kept within bounds by a continual system of mutilation both at the root and top, and bareness is the consequence. I am aware it is not always practicable to have the walls as high as they should be; but it is very little use building walls at all if they cannot be made high enough. Height is of most importance in the case of stone fruits, which cannot be successfully trained on any other than the fan system. Pears and Apples may be trained on low walls on the horizontal system, and pretty successfully, provided the trees are prevented from running to growth at their tops by timely pinching and disbudding; but stone fruits, and particularly the Peach, like a long stretch for their branches, and a fan-like spread, to insure a good development and a fruitful habit. For such subjects I should prefer the gable end or side of the dwelling-house to low garden walls, which could be devoted to other things. Where expense of building is a consideration, walls may be heightened by a boarding at little cost. Rough, unplaned Pine boards are good enough, and they may afterwards be painted with pitch to preserve them. Nearly all kinds of fruits usually cultivated against walls will cover an immense extent of wall surface if they have room, and in a very short time too, if they be trained on the extension system, which is superseding every other plan. I have seen Peach trees in Scotland that covered a wall 25 ft. high, and which spread out twice that distance laterally, and bore great crops; and as for Apples, Pears, Plums, &c., they grow even more vigorously than the Peach. Chef.

Vines and Potash.—A paragraph having reference to this subject has been going the rounds of the horticultural papers, from which it would seem that the idea of potash being a good manure for Vines is considered as new, whereas it is nothing of the kind. I am not sure if there be any kind of plants that potash would not benefit, but it has long ago been particularly recommended for Vines. In Lindley's "Theory and Practice," published more than twenty years ago, potash, in the form of wood ashes or otherwise, is especially recommended for the Vine, and to be used in large proportions in making up borders (see pp. 145, 146, and 554). Thomson also recommends wood ashes in his "Treatise on the Vine," p. 17, and I remember reading years ago—ten years perhaps—that potash markedly influenced the colouring of the berries. For these reasons I have repeatedly burned all the rubbish on the place here since 1865 for the sake of getting the ashes for the Vine-borders, and the proportions used have only been limited by the quantities which we could procure by these means.—J. Simpson, *Wortley.*

Variation in Peach Ripening.—The "Southern Cultivator" gives some curious facts showing the wide variation in the ripening of Peaches, effected by locality and external influences in South Carolina. The first specimens of the Alexander ripened June 19; Hale, July 7. This is probably about the usual difference in time between these two sorts; frequently they ripen nearer together. Tillotson is commonly a week later than Hale, but last year it was several days earlier. A Tillotson ripened its fruit from the 20th to the 24th of June; much earlier than the average. In one year, Serrate, Early York, and Mott's Early Red, ripened with Hale; in another, Hale was greatly in the advance. These facts show the importance of trying new sorts for several years, and in different places, before fixing their proper time of maturity.

PLATE LXXXIII.

GLADIOLUS SAUNDERSII.

Drawn by H. HYDE.

This fine species was sent to me a few years ago from South Africa by Mr. Thomas Cooper, who was then acting for me as a collector of plants. The bulbs, when they reached this country, were in a very distressed condition, having been long out of the ground, and I could not get them to flower until I had grown them for one or two seasons. The first that flowered satisfactorily was planted in the ground under a movable glass covering running along the east wall of a stove, and protected from too much rain and frost. Here it flowered well. My experience of the plant is not great, but I see no reason to believe that its constitution differs from that of other South African species of Gladiolus, and if treated as good cultivators grow the fine hybrid Gladioli of the present day, it will succeed perfectly. For the specific characters of G. Saundersii given below and for notes on the species I am indebted to my friend Mr. J. G. Baker, of the Royal Herbarium, Kew, whose knowledge of the Iridaceæ and whose minute acquaintance with the species of Gladiolus make him at present the best authority on this very interesting set of plants. Few bulbs are so worthy of cultivation as those of the genus Gladiolus, and looking to the beauty and elegance of their blossoms, they must long hold a place in the estimation of all interested in the cultivation of flowers. Much has already been done in producing a number of very fine hybrid varieties, but there is yet a very wide field for further improvement by means of hybridization, particularly where new and distinct species can be brought into action, such as the species now under consideration, and others of a good showy character and constitution. The latter quality should be particularly attended to, for we want hybrids that will bear our climate in the south of England during the summer, and not suffer from the violent changes which so much affect the growth of plants in our gardens. Many species of Gladiolus do well with me here, planted in rich, light, loamy soil about 1 ft. from the bottom of a warm south wall; when so treated, the bulbs seem to gain strength yearly and flower freely. I should observe that our winters are mild here, and under a south wall the frost would scarcely ever penetrate more than 2 in. or 3 in. into the ground. W. Wilson Saunders.

Raystead, Worthing.

The following is Mr. Baker's description above alluded to:—

Gladiolus Saundersii (Bot. Mag., t. 5873).—Bulb globose, with brown tunics; leaves five to six in a distichous, basal rosette, ensiform, 12 in. long, and 1 in. broad when the plant is cultivated, narrowed to the point, with moderately strong, raised veins; stem, including the spike, about 2 ft. high, bracteated by one or two reduced leaves between the inflorescence and basal rosette; spike very lax, secund, 6 in. long when well developed under cultivation, composed of from five to six flowers; spathe-valves lanceolate, acuminate, green at the flowering time, the outer one from 1½ in. to 2 in. long; ovary oblong, ¼ in. long; tube slender, curved, not more than 1 in. long; limb bright scarlet, 2 in. long in wild, and from 2½ in. to 3 in. long in cultivated specimens, the three upper segments uniform in size, oblong spathulate, entirely scarlet down to the base, 1 in. broad, the top one standing forward and permanently convex on the back, the side ones reflexing from low down; the three lower segments rather smaller, reflexing from low down when expanded, furnished with a large, pure white patch at the throat, with a few scarlet dots; stamens arching inside, the upper permanently concave, perianth-segment, and reaching to its tip; filaments scarlet; anthers ¾ in. long; style reaching to the top of the perianth and stamens, its arms ½ in. long, falcate, with the oblong-cuneate stigmas at the tip. The above description is taken mainly from a plant that flowered in the Kew collection in July, 1872. The only wild specimen that I have seen that I can refer to here with full confidence was gathered on the Krans Kop in Natal, by the late Mr. McKen. I believe Mr. Cooper's plant from the Albert district, spoken of in the "Botanical Magazine," to be not Saundersii, but a form of psittacinus and the same with Burke's from the Fat River. The general habit is quite that of psittacinus, but the leaves are rather thinner and more grassy in texture; the spathe-valves are thinner, more membranous and more acuminate; the shape and colouring of the flower are very different, bright scarlet with a pure white throat, continuous in colour, not at all mottled with yellow. In psittacinus, the tube is as long as the segments, the tube being longer than in Saundersii and segments shorter, and in psittacinus the three lower segments are not only smaller absolutely, but in proportion to the three upper, being generally only about 1 in. long and ½ in. broad, so that the expansion of the limb is

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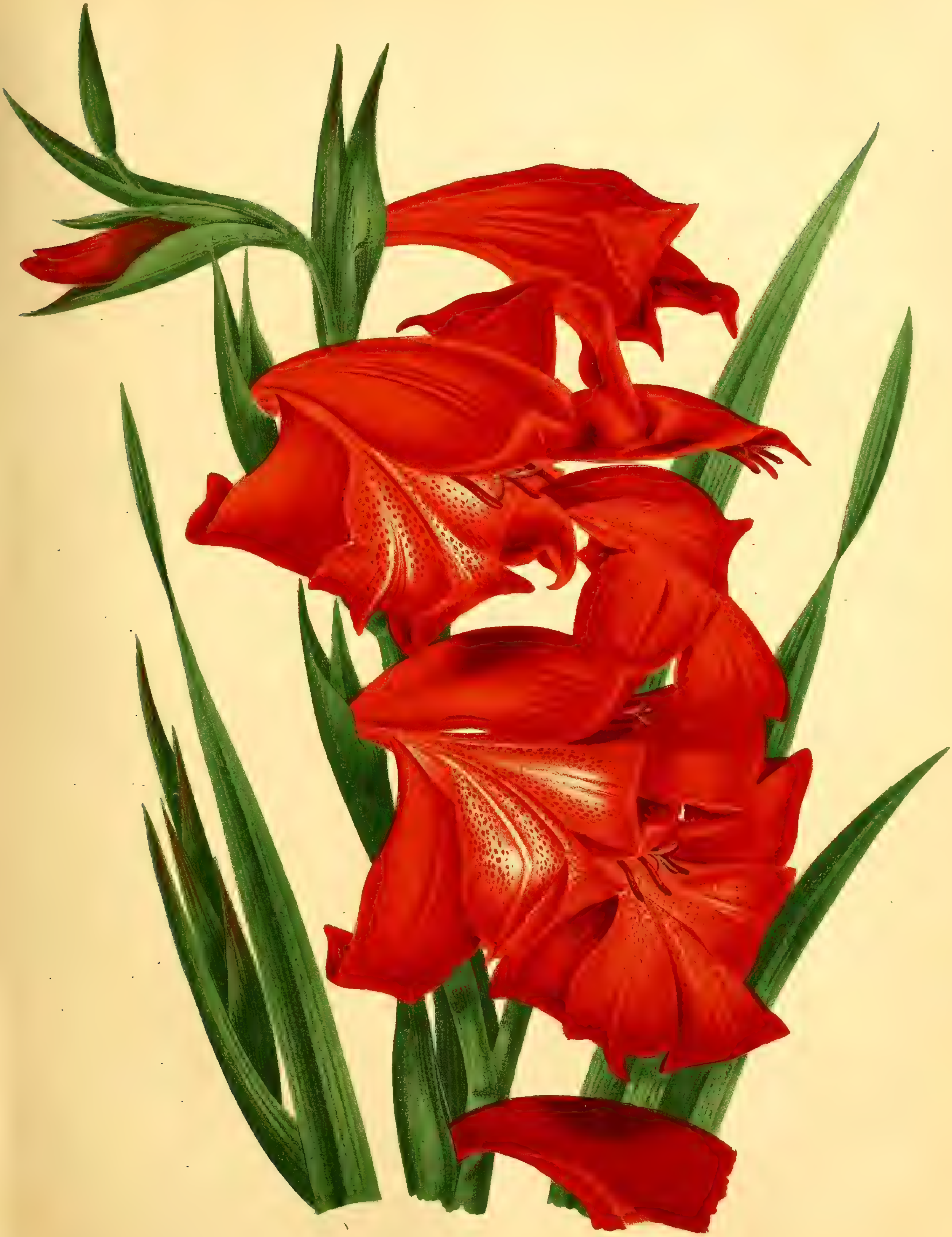


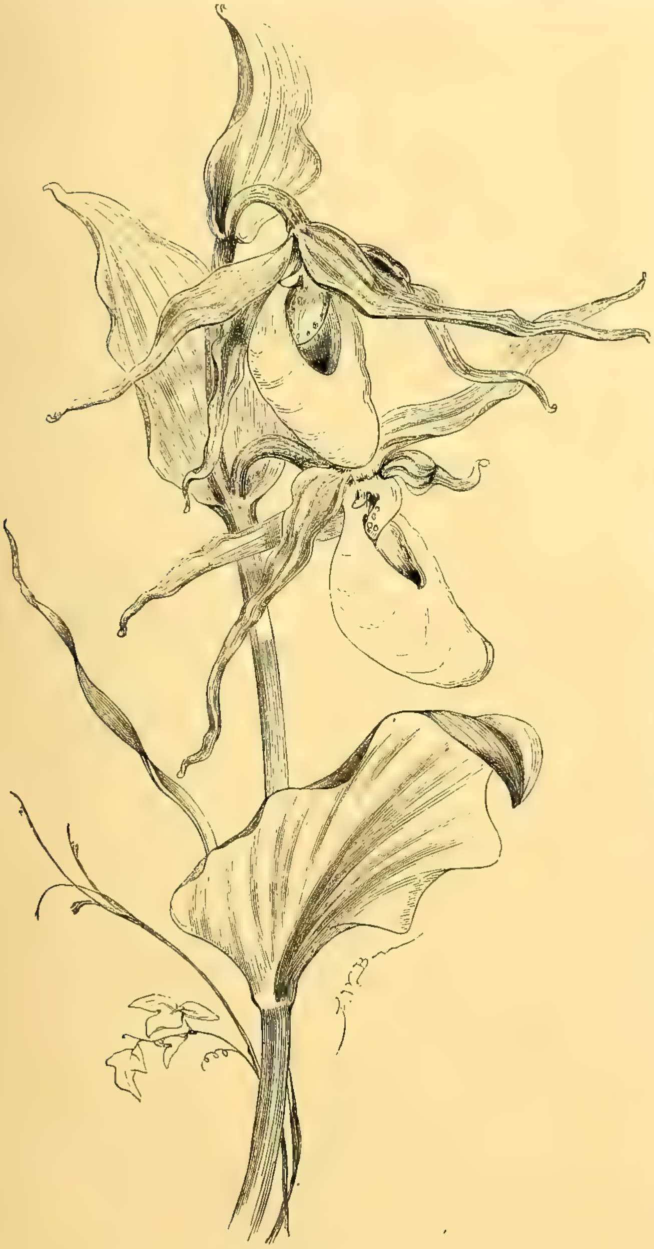
SAUNDERS' GLADIOLUS (G. SAUNDERSI-BAKER).

much greater in Saundersii than in psittacinus, and this, taken with the purer, brighter colour, gives the newer species a much finer decorative effect.

The annexed illustration was prepared from a plant which flowered in Messrs. E. G. Henderson's Nursery, about this time last year.

SNOWY-LIPPED LADY'S-SLIPPER.

(CYPRIPEDIUM OCCIDENTALE).



Cypripedium occidentale.

The annexed illustration represents a pretty little plant which was exhibited in May last at South Kensington by Mr. H. J. Elwes, in whose garden at Cirencester these hardy Lady's-slippers seem to attain a luxuriance unheard of elsewhere. It is a graceful little species, attaining 10 in. or 12 in. in height, and generally bearing a couple of flowers at the top of its leafy stems. In general habit, size, and form of its flowers, it closely resembles C. Calceolus, but is readily distinguished from all other hardy Cypripediums by its egg-shaped lip being of a pure white colour. It is undoubtedly a desirable plant, superior in size and beauty to C. candidum, of the type of which, however, it may prove to be a more showy form. Lindley describes a similar plant under the name of C. cordigerum as being found scattered through Europe, Dahuria, and, according to Thunberg, also in Japan, adding that its characters are those of our native C. Calceolus, except that the lip is pure white. For a long time neither cultivators nor botanists recognised the vagaries in size, form, and colour which are now apparent in tropical and epiphytal Orchids, and the immense variety observable in the hardy, exotic, terrestrial species is just beginning to be apparent. That the hardy Lady's-slippers, however, do vary quite as much as their tropical congeners was shown in a luxuriant batch of the rosy-lipped C. acaule (C. humile), recently exhibited by Mr. Elwes, among which we noted three forms so distinct in size and colour of the flower and in breadth of the leaf that only a few years they would undoubtedly have been described as new species. Only last year we were astonished at the immense variety in size of flower, breadth of petal, and colouring, as exhibited among perhaps 500 individual clumps of the rosy-lipped C. spectabile in Messrs. Rollisson's nursery at Tooting, where, in some individuals the flowers were almost pure white, while in others they were decidedly flesh-coloured, with rosy-crimson, boldly-rounded lips. This variety in the way of colour, is not, however, confined to Orchids; it is equally well exemplified in Irises and many other genera. F. W. B.

Death of Hardy Bamboos.—The simultaneous death in Great Britain and Ireland of Arundinaria falcata is much to be deplored, as large plants of it were strikingly ornamental. At Combe Royal there were fifteen or sixteen huge clumps of it in the grounds, which were greatly admired; one of them—the largest—in a somewhat damp situation, after many canes having from time to time been cut, was found on examination to consist of quite 550 stems, from 15 ft. to 18 ft. high. Perfect seed was produced last summer, from which plants have been raised, but of course many years must elapse ere they rival their progenitors.—John Luscombe, *Combe Royal, Kingsbridge, South Devon.*

Campanula macrostyla.—You may like to see the enclosed flowers of Campanula macrostyla (if that be its right name; I had it before as macrocalyx). You sent me seeds from Paris, but these are not from your seeds, but from self-sown seeds of a plant that flowered two years ago; but there was no appearance of anything last year.—H. N. Ellacombe, *Bitton.* [This is a novel-looking plant with very large flowers, with blue netted veins on a white ground getting purple at the edges, and having a huge stigma. It is wholly distinct from any of the Campanulas hitherto in our gardens, and well deserves culture. It is an annual plant, indigenous to Anatolia, and said to be as hardy as Venus's Looking-glass.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Double British Spiræas.—These are admirable garden plants—the Double Dropwort (S. Filipendula fl.-pl.) being as graceful in its foliage as pretty in flower. It is used with very good effect as an edging to quarters in Mr. Parker's nursery at Tooting. It is valuable for the mixed border also.

Hardy Lady's-slipper.—Cypripedium spectabile has yielded me some sixty flowers in the open ground, and C. parviflorum has also bloomed finely, whilst C. occidentale flowered without protection a week before the latter, and a fortnight before the former.—H. B.

Burghley Yellow Rose.—A correspondent of the "Journal of Horticulture" states that he has "known this Yellow Rose for the last forty years. It is the double yellow Provence. It was brought originally to Burghley House, the seat of the Marquis of Exeter, by a French cook. I have also seen it growing in a semi-wild state at Bologna. It is a most difficult Rose to bloom, but of great beauty when the buds will open. I know no such yellow. Mr. George Paul, of Cheshunt, informs me they are unable to grow it there. I have several times budded it on the Briar. It is known in Lincolnshire, and is grown at this time in great perfection at Enham Place, near Andover.

Variegated Comfrey.—"T. M." in "The Gardener" says:—Symphytum officinale variegatum, a variegated kind of the well-known Comfrey, is strikingly beautiful. Its large lanceolate leaves are broadly and distinctly margined with creamy white. It is a very effective plant for planting in mixed borders, and is no less so in lines in ribbon borders; indeed, it is one of our very best plants for this purpose, far surpassing the variegated Coltsfoot that was recommended so strongly some years since. Our own opinion is that the leaves become shabby too early in the season to make it worth much in the flower garden.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Large-flowered Pelargoniums, if not already placed out-of-doors, should be fully exposed to the sun for two or three weeks in order that the shoots may be ripened before cutting back, a condition that it is invariably necessary to secure, otherwise they do not break properly, for if headed down whilst the wood is in a green, immature state, it often happens that not more than a single eye will break from each shoot so cut back instead of several; when sufficiently matured the bark of the shoots should assume a brown colour for a considerable length above the point where cut back to last year; to assist this maturing process give no more water than will just prevent the leaves flagging, and should the weather be showery, or there be an appearance of thunder-storms, the plants should be laid down on their sides. In the case of specimens that are as large as required, when cut in the shoots should be shortened to within two or three eyes of where cut back to the preceding year; with smaller plants that it is desirable to increase in size, four or five eyes may be left to every shoot. When well managed these Pelargoniums will last a long time: I have had them for a dozen or fifteen years, at the expiration of which time they grew and flowered every year just as freely as when younger. The Fancy kinds may be likewise turned out, they have been grown in houses where they have received insufficient light, and the growth has been correspondingly weakened, otherwise it is not necessary to place them out-of-doors as from their naturally close habit of growth the hardening process is not so essential; they must not be cut so closely as the large-flowered kinds, not being able to break and grow from the hard wood in the same way; if the current season's shoots be shortened to one-half their length, it will be sufficient. Whilst the plants are out-of-doors it is necessary to take care that the soil is not too wet, as the roots are more impatient of any excess of moisture than the large-flowered varieties.

Fuchsias, &c.—Some cuttings should now be put in to keep on growing slowly through the winter; these will give much more satisfaction than old plants, which, as generally managed, are thin and scraggy, showing too much of the old wood, whereas a well-grown Fuchsia should be profusely furnished with young shoots covered with flowers and healthy foliage. Fuchsias, Petunias, and Zonal Pelargoniums that are intended to flower through the autumn should receive all requisite attention, and be kept in a blooming condition so long as there is sufficient atmospheric heat and light, as from this time forward there are comparatively few greenhouse plants to maintain a display.

Cassia corymbosa and Plumbago capensis.—There are not many plants better adapted for autumn blooming than the yellow-flowered Cassia corymbosa; it blooms for a considerable time, is easily grown, and with ordinary care will last for many years; and, as it requires to be cut back moderately after flowering, it need not occupy much space through the winter. Plumbago capensis will now be coming into flower, and if encouraged with manure water, it will both increase the strength of the blooms and cause the plants to keep on flowering longer.

Strawberries.—Amateurs who intend to grow Strawberries in pots should at once make preparation for them. The most satisfactory way is to lay the runners in small pots, allowing them to root therein, after which they can be severed from the parent plants and subsequently moved into the larger pots in which they are to be grown and fruited. This will be found a much better plan than taking runners that have first been left to root into the open ground and then potting them, as by the former process the plants do not receive the check which is inseparable from the latter method, and which, in a season like the present, when the runners in most places are so unusually late, it is necessary to avoid; for upon the time which the plants have to make plump, well-ripened crowns, depends their ability to fruit, always bearing in mind that in the pot culture of Strawberries, unless the plants are thoroughly matured before the autumn advances, it is impossible to ensure a satisfactory crop. Procure a number of 3-in. pots, and place at the bottom two or three pebbles or pieces of crock with some dry, shaly manure, to prevent the soil clogging up the drainage; on this dust a little soot to stop the ingress of worms, fill up the pots to within ½ in. of the rims with ordinary garden soil, to which has been added a little manure, pressing it firmly in; make holes with a planting trowel, and plunge the pots between the plants from which the runners are to be taken; then lay each runner at a joint singly on the pots, securing each with a small stone until rooted. The soil in the pots must be kept regularly watered—in the first instance to encourage the production of roots, and after these are formed to support the plants. This watering is important if the weather be dry, as upon attention or neglect in this matter depends the successful development of the plants; in hot weather it should be given every day. The runners will need nothing further until well rooted in the pots. It is now also time to prepare ground for planting Strawberries, and with these, as with the plants for pots, during a season like this, it is essential that no time should be lost, otherwise but a small quantity of fruit may be expected from them next year. Strawberries succeed best in strong, heavy land, frequently doing well in soil of a clayey nature, provided it be sufficiently drained, for if there be stagnant water in it, the plants will die off in quantity through the winter. Where marl can be had, from its naturally rich constituents, I should give it the preference over clay, but so far as the mechanical influence which clay exerts upon the soil in enabling these plants to grow and fruit well, it is but slightly inferior, and there are few localities in which clay is not obtainable at little cost. Land that has been previously cropped with any culinary vegetable will suit the Strawberry, or still better if broken up from Grass; in the latter case it should be dug 12 in. or 15 in. deep, putting the sward in the bottom, digging in (as the work progresses) a moderate dressing of manure; where the ground has been previously cropped, dig it over, or if there be a sufficient depth of good soil, trench it 15 in deep, adding manure more or less as required. As soon as the ground is so far prepared, where the soil is too light 3 in. of marl or clay should be laid on the top, breaking it very small, as the finer it is reduced in this way the shorter time it will require for the air and sun to dry it thoroughly, without which it cannot be properly disintegrated. If the weather be hot, ten days will suffice to dry the lumps right through, which upon being moistened with rain or watered by hand will crumble down, and should be forked into the soil, mixing it regularly with about 6 in. of the surface, after which tread the ground solid and plant as soon as the runners are ready—a distance of 2 ft. between the rows and 18 in. from plant to plant in the rows will suffice, immediately giving a good watering, and if the weather continue dry, lay some Pea-sticks over the plants, on which spread bast mats, old blinds, or any material that will shade them for a few days until they get hold of the soil; where sufficient material of this sort is not available, any flat branches of Evergreens, such as those of the Spruce or Yew, stuck horizontally in the ground to protect them from the sun, will answer the purpose; continue to water as required. For the limited extent which amateurs generally plant, it is worth while taking some trouble to give requisite shade, which will not be needed more than ten days or a fortnight, after which the plants will be sufficiently strong to support themselves during the ensuing winter. Where the space to be planted is greater than can be kept shaded and watered as above, there is no other way but to wait for showery, dull weather, in which case it is often advisable, as soon as the runners are ready, to plant them in nursery beds 5 in. or 6 in. apart, which will admit of a considerable number being shaded and watered with little trouble afterwards; when the weather gets cooler with more rain, they can be transferred to where they are to be permanently grown. There is such a difference betwixt the quantity of fruit produced by Strawberries where all possible attention is given to assist them, and where but moderate care is bestowed upon them, that it is worth while, if only a limited breadth be grown, and the situation naturally not over favourable for their cultivation, to take the trouble of layering the runners in small pots for planting-out, similarly to the way described for those intended to be fruited in pots, more especially in such seasons as this, when the runners are late. In the case of Strawberries, as of other plants, it is, no doubt, desirable to study change or rotation of crop. Potatoes prepare the ground as well as anything, but it often happens, especially in gardens of a limited size, that it is more desirable to continue growing some particular plant, such as Strawberries, in the same place; where this is the case, and the ground is occupied by plants that are becoming exhausted, they may be cleared off or dug in with a good dressing of manure, adding marl or clay where required, re-stocking the ground with young plants which will go on bearing as if growing in fresh land. I am acquainted with places where Strawberries have been continuously cultivated for fifteen or sixteen years, and this by men who grow for market, and who most certainly would not keep them on the same ground longer than they would answer.

Cabbage.—Some seed should immediately be put in, but in determining the time of sowing for the spring supply, it is necessary to discriminate betwixt the kinds grown, and also to make some allowance for different parts of the country. If early sorts such as the Early York be sown from the 20th to the 25th of this month in the southern parts of the kingdom, I have generally found them liable to run to seed the following spring: whereas if the somewhat later and larger varieties (of which Enfield Market may be taken as a representative) be sown, I have not seen them so affected; consequently where the earliest kinds are grown, it is better not to sow until quite the end of the month. To those who have not had much experience in the cultivation of vegetables, it may appear strange that the short interval of a week or ten days should have an influence in the matter, but nevertheless it has, and where sowing is delayed beyond the proper time in some seasons, it will affect the time of the crop being ready in spring much more than the few days' difference of sowing, as so much depends upon the plants getting strong before the winter sets in.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. DENNING.

July 23.—Potting late Tuberoses and stove plants. Shifting Daphnes into a mixture of loam, peat, charcoal, bones, and sand; also Amarantus and Dracænas, and put them in warm house. Digging up Rivers' Early Ashleaf Potatoes, watering Vine borders, also Peas, and afterwards mulching them with manure. Thinning Mignonette in pots, and clipping Cerastium edgings, and preparing borders in which to put Pelargonium cuttings.

July 24.—Shifting and re-surfacing some of the Masdevallias, and Odontoglossum vexillarium. Drying off Dendrobium Cambridgianum. Watering permanent Peach Trees, also the plunging material between Fig trees in pots. Layering Strawberry runners with which to make new plantations. Digging land for Turnips, cutting Lavender, weeding and thinning Chicory, and earthing-up Cucumbers.

July 25.—Potting Abutilon Boule de Neige; also Primulas, and afterwards placing them in a close shady frame until well rooted. Planting Coleworts on early undug Pea land, making the holes with a crowbar, and afterwards watering the roots well in. Putting in more cuttings of Poinsettias. Staking Petunias and Rhodanthes; watering Celery. Dressing Apple Trees with Paraffin to kill American blight.

July 26.—Potting Sir Harry Strawberries for forcing. Putting in cuttings of Lady Plymouth Pelargoniums for pot culture. Watering Herb beds and Pear trees. Filling pits with fermenting material in which to plant Cucumbers. Digging land for main crop of Spinach.

July 27.—Potting Pinks and winter-flowering Carnations. Sowing Sir Joseph Paxton French Beans under the protection of a wall. Earthing-up Cauliflowers. Planting some Perilla amongst Pyrethrum, and also planting Paris Cos Lettuce. Putting guano down in Orchid-houses, and cleaning all Orchids that are infested with any kind of insects.

July 28.—Potting Caladiums and young Begonias. Sowing Nemophilas for pot culture; also Ten-week Stocks, Phlox Drummondi, Lobelias, Rhodanthes, Schizanthus, and Clintonia pulchella; also sowing more Lettuce, American Cress, French Beans, and Spinach. Watering Rhododendrons likely to suffer from drought. Putting in cuttings of Centaurea and Artemisia. Tying-up dried Basil and putting it in paper. Digging land for July-sown Lettuce.

Hardy Flowers.

Auriculas.—The cool moist weather which we are now having is just suited to newly-potted Auriculas. They should now be screened from heavy rains, but a soft gentle shower may be allowed to fall upon them occasionally. When the frames are on a north aspect only a slight shading is required; but if the position of the frame containing the plants is such that the sun can strike it during a portion of the midday when it is at its hottest, some shading is necessary. If aphides gather about the crowns of the plants, they should be brushed off, and the surface-soil unceasingly stirred, and kept free from weeds.

Fuchsias.—There are some Fuchsias which possess an individuality of character both in leaf and flower that renders them valuable as decorative plants. The fine old F. fulgens may appropriately head the list, with its long orange, red, and brilliant carmine flowers: it is a very free-flowering plant, and one which lasts long in perfection. A variety called F. rubra splendens has the same flowers in every respect, but the leaves are smaller, and blotched with claret. Then there are the fine old Fuchsia corymbiflora and its light variety, F. virginalis, of which I have a fine plant in full bloom, and very charming it is. In addition I have F. microphylla, the most minute of all Fuchsias, pumila, globosa, Riccartoni, Dominiana and spectabilis, all as varied in character as they are interesting. They are all the more attractive when mingled with some of the leading modern varieties, and of these I can confidently recommend Sedan, Germania, albo-coccinea, Noblesse, Lustre, and marginata; and for their handsome foliage, Avalanche and Wave of Life. Some of these are so distinct from ordinary Fuchsias as to be doubly valuable on that account. F. Riccartoni is now flowering freely on a west wall in a somewhat cool and shady place in the open air, where it had no protection for the past three years.

Gladiolus.—As these are now throwing up their flower-stems, care must be taken to tie them securely to stakes, so that they may not be broken off by the wind. Cases of failure are reported, probably owing to the excessive moisture of the ground and the coldness of the weather at the time of planting. I had some valuable seedlings which I kept out of the ground till they appeared almost shrivelled to nothing, but they have made an excellent growth, and appear to be doing well. In the case of such a spring as the last it is, perhaps, the least risk to plant late rather than early. Beds of Gladioli should have the surface soil stirred and freed from weeds. A mulching with decayed cow-manure will be found of great service, but as it is very apt to be infested with grubs and other insects likely to be injurious to the plants, it is well to thoroughly scald it by pouring boiling water over it, allowing it to soak for a few minutes, when it will readily crumble to pieces. The water should be poured about the roots as soon as it is cool enough, before the mulching is put on.

Pansies.—The late rains are greatly helping Pansies, which are now throwing up young growths from the roots. These may be taken off for cuttings as soon as large enough, and put into a well-prepared bed under a shaded north wall. Such a bed as this is of great value at this season of the year for striking cuttings of such plants as choice Antirrhinums and Pentstemons, Pansies and Violas, Cheiranthus, Rockets, &c. I have such a bed as this, which is raised about 9 in. above the ground level. At the bottom is a layer of brick-rubbish, and over this another of coarse cinder-ashes, and above that some pieces of green turf, with the Grass downwards. This was trodden down firmly, and then filled up with prepared soil to the depth of 4 in., made up of fine sifted loam and leaf-mould, a little rough Bedfordshire sand and some finely-sifted cinder-ashes. This is well mixed together, and the whole placed in the bed and firmly pressed down; then I add a thin layer of very fine cinder-ashes on the top. In such a compost cuttings of the plants I have named strike freely, and the cinder-ashes seem to keep the soil open, and slugs and other vermin at bay. Cuttings of Violas may be similarly treated. A little top-dressing greatly helps the production of strong young wood, from which cuttings can be made.

Petunias.—Beds and ribbon lines of these are now very effective. For decorative purposes the small, finely-formed, striped section is to be preferred; the growth is dwarf, compact, and somewhat spare, while the flowers are produced with great freedom. There is a section with a more robust growth, which produces large but looser flowers than the foregoing, flowers that hang their petals and have a flabby appearance; this section does not bloom so freely as the foregoing. Sometimes persons who grow Petunias are apt to be disappointed because the flowers come self-coloured; this is frequently the case in regard to their early blossoms, but the later ones invariably break into the correct striped form, and then all sense of disappointment is lost in the contemplation of so much beauty. During dull, wet weather, the flowers will come self-coloured, but let a hot sunny day follow, and then the striped character flashes forth again with charming effect. Petunias, both double and single, make fine exhibition plants; they succeed uncommonly well in the west of England, especially the single varieties, where plants can be seen having from fifty to one hundred flowers—and very fine flowers, too. There is nothing like them to be seen round London.—D.

Fairmount Park.—The authorities in charge of Fairmount Park, Philadelphia, have decided to use a portion of that domain for educational purposes, and have asked the co operation of the Pennsylvania Horticultural Society. It is proposed to begin with the hardy perennial and Alpine plants, and form as complete a collection as is possible. Every character of soil and location is readily obtained, even for the aquatic plants; so that we may anticipate a rich treat for the student of botany when rambling through these grounds in future years. Rockeries are in anticipation for such species as prefer this peculiar treatment, and the many shady nooks and corners will certainly cause our choice natives to feel at home.

Cratægus Hosti.—The "Revue Horticole" figures Aria Hosti, a species allied to our common Whitebeam, but with corymbs of rosy flowers. It is the Sorbus Aria var. sudetica of Linnæus, and has other synonyms. It is grown by MM. Simon-Louis, of Nancy, under the name of Cratægus Hosti.

MILLETS.

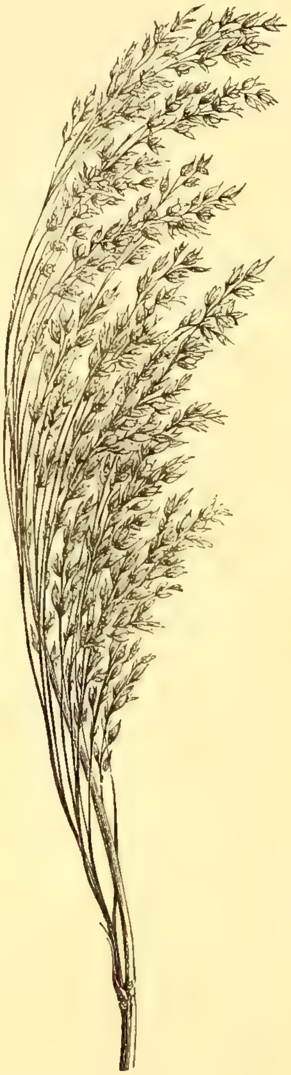
From whatever point of view the members of the large Order Graminaceæ may be regarded, whether as ornamental or useful plants, they always claim a large amount of attention. From the common Meadow Grasses, many of which are of the most delicate and beautiful forms, to the stately Bamboos of the tropical jungles, all have something to recommend them, either for artistic grouping, for their individual grandeur, or for their importance as food plants. Under the general name of Millet we find collected together numerous Grasses of varied habit, but all more or less beautiful in form, of wide geographical range, and moreover of great value in an economic point of view. In many countries Millets under their several genera and species form the staple food crops of the people. With us, however, the grain is comparatively little known, and the name itself is oftener applied to Panicum miliaceum or Setaria italica, both of which are represented in the accompanying figures, than to anything else. That Millet may claim an equally ancient history with Wheat and other well-known cereals—though not of equal importance — seems probable, from the fact of its being mentioned along with Wheat, Barley, Beans, and Lentils in the book of the prophet Ezekiel; and Virgil says—

> Sow Beans and Cinquefoil in a mellow soil,
> And Millet, springing from your annual toil.

What the plants were that furnished the ancients with Millet is a question not of easy solution. At the present time the following genera may be roughly charged with producing Millet in some of its varied forms. Taking those, as stated above, that are best known in this country as Millet, we find that the genus Panicum, which is typical of the tribe Paniceæ, includes a vast number of species which, though widely distributed, have their head-quarters in tropical and sub-tropical countries. Panicum spectabile, in Brazil, grows to a height of 6 ft. or 8 ft , and on the Amazon some other species are quite as luxuriant. Panicum miliaceum is one of the kinds largely cultivated in India. It has a loose, nodding panicle, and long, broad, slightly-hairy leaves. The seeds are ovate, somewhat pointed at each end, measuring when ripe about an eighth of an inch in length, smooth and shining. Several varieties of this Millet are known, distinguished chiefly by the colour of the seed—thus in the common kind the seeds are yellow, in one variety grey, in another white, and in one, more distinct perhaps than any other, the seeds are almost black, and the panicle itself has a blackish-green colour. Under the name of Millet Rice, Panicum miliare is also cultivated in India. Its panicle is somewhat similar to that of the last, but perhaps even more graceful, bending down as it does with the weight of its ripened grain. P. frumentaceum is also frequently cultivated in India, the produce on a dry soil being, it is said, about forty-fold. The seeds are very largely used as food both by man and for cattle. This species is distinguished by having an erect instead of a drooping panicle.

The other species of Millet shown in the annexed illustration is that generally known as the Italian Millet (Setaria italica). Its seeds, as will be seen, are borne in much more compact spikes than in the last genus, the hairy or bristle-like appendage of the involucre being also a distinct character. This plant grows to a height of from 3 ft. to 5 ft., the leaves sheathing, and the spikes curved or bending with the weight of the numerous seeds which are small and light-coloured, and when ripe are easily shaken out of the husk. They are largely used in Italy for the preparation of a kind of flour which is made into bread. In India it is also cultivated on light, dry soils yielding two crops in the course of nine or ten months, the first being harvested in June or July, and the second between the months of September and February. The seeds are very largely used when finely pulverised for pastry or for making light foods for invalids. Under the name of German Millet, described as Setaria germanica, is cultivated in Moravia, South Hungary, and Lombardy, a plant of a dwarfer habit than the preceding with a shorter, more compact, and more upright spike, the seeds, however, being similar in size and shape. It is known as "Moha" by the Germans, and the seeds are used for making bread as well as for boiling in soup and in milk, and they are also used for feeding domestic animals.

In the genus Sorghum, the seeds of which, like those of the preceding genera, are known as Millet, the most important is Sorghum vulgare. This is also well known as the Guinea Corn, and some of its varieties grow to a height of 6 ft. or 7 ft. The panicles in some forms are very dense, in others more loose and spreading, but never absolutely drooping when fully ripe and the spikelets open or expanded, the panicle has a very graceful appearance. The seeds are large, nearly oval, and very variable in colour in the different varieties, some being white, others yellow, and others again reddish or black. In one or other of these forms the species is largely cultivated in Italy, Spain, and other parts of Southern Europe, and also in Egypt, Asia Minor, Arabia, India, where it is called Dhurra, and in West, and even Central Africa. In India it is very extensively cultivated and used as food, the flour of the white variety being of a good colour and, when properly prepared, equal in appearance and value to that from Indian Corn or Maize. The produce upon good soil in India is said to be upwards of a hundredfold. In the Gulf of Guinea, and on the Gold Coast, the seeds are mostly used for making a coarse kind of bread, and many tribes subsist almost entirely on this kind of food. By many it is very roughly prepared, the seeds being simply cleansed of the husk, washed in water, and then boiled, and in this form they are eaten either with meat or cured fish, and sometimes mixed with other esculents. Besides their use as food, from these seeds is prepared a fermented beverage of different degrees



Panicum miliaceum.

of strength, known under different names, according to the greater or lesser degrees of fermentation to which it has been subjected. In some of the French provinces Sorghum vulgare is grown chiefly for the purpose of feeding poultry. Though often grown in botanical collections in this country, the Sorghums have been proved unsuitable for general cultivation with us, requiring more heat and dryness than our climate affords. A very good collection of panicles of several varieties of Sorghum is contained in the Kew Museum. From the panicles of a large variety of this Grass, after being denuded of its seeds, excellent brooms and brushes are made, generally known in commerce as Whisk.

Sorghum saccharatum is generally known under the name of the Sugar Millet, or sometimes by that of the Chinese Sugar-cane. In America a good deal of attention has been paid to the cultivation of this plant and to the manufacture of sugar from the stalks, a full account of which may be found at p. 649 of Porcher's "Resources of the Southern Fields and Forests," new edition, Charlestown, 1869. The stalks of these Sorghums are much valued for cattle food on account of the quantity of sugar which they contain. Under the name of "Gero," the round grains of Penicillaria spicata are in daily household use by the natives on the rivers Niger and Gambia. Though it is cultivated at the present time to a great extent, it is said to be not so generally used among some tribes as formerly. From what has been gathered by travellers from some native tribes, it seems clear that this grain "constituted the most ancient kind of food adopted by their primitive forefathers, and on this account was especially dedicated to the celebration of the more august feasts and religious ceremonies." The plant has long, sheathing leaves, and a terminal, cylindrical, erect spike about 1 in. in diameter, and from 1½ ft. to 2 ft. long. The seeds are somewhat obovate, smooth, and of a yellowish colour. For convenience of transit among the tribes of the Niger, a large number of these long grain-bearing spikes are frequently joined together by a system of plaiting of the stalks, the spikes standing out at right angles from each other; in this way they are easily rolled up together, and when wanted for use a few spikes are detached or cut off, and the grains beaten out. A fine illustration of this kind of packing is shown in the No. 2 museum at Kew. The seeds are mostly used in the preparation of a coarse kind of bread. On the Gambia a favourite dish is made by pounding the seeds with the husks in a mortar, and after sufficient pounding pouring the contents from one calabash to another, and allowing the wind to blow away the chaff; this is done till the whole of the husky particles are removed. The cleansed grain is then replaced in the mortar, and beaten to a very fine flour; water is added and the mass made into a kind of stiff paste, the vessel containing the mass being continually shaken by a peculiar rotatory motion, so that the contents gradually resolve themselves into very small granular particles, similar to Sago. It is now put into a large earthenware cooking pot, pierced through the lower portion by numerous small holes; through these holes the steam ascends from another vessel beneath filled with water, into which meat or fish, vegetables, and condiments, are put: the vapour arising from this permeates and softens the whole mass above. Amongst the poorer tribes in some parts of Africa this grain is simply eaten when freshly gathered and in its raw state, or dried or parched in the sun. Bruised and then soaked in water, it forms a kind of stock food, convenient in travelling for the use of pilgrims and soldiers; over and above its use as food, the grains of this species of Millet are used for making several kinds of beverages of a nature more or less intoxicating. In parts of Western Africa where the cultivation of this corn prevails, and at the period of the ripening of the grain, the fields are visited by immense flocks of small birds, which have to be closely watched in order to keep them from eating the grain. From the few examples of the cultivated species of Millet just alluded to, it will be seen that these small-grained Grasses are almost as important in some parts of the world as are Wheat, Barley, or Oats, in our more northern clime, besides which they have much to recommend them, if only for their natural beauties. J.

Setaria italica.

Callirrhoe macrorrhiza alba.—No white form of any species of this favourite genus of Malvaceous plants has hitherto been discovered; the present introduction has therefore some claim to notice on the score of novelty, apart from its intrinsic merits, which are considerable. It is of very neat habit of growth, producing from a tap root, which ultimately attains some size, an erect stem from 1½ ft. to 2½ ft. high, which bears a corymbose raceme of pure white flowers, on long, naked foot-stalks, articulated near the summit, the corolla being rather more than an inch across, and the calyx without the involucral leaflets, which occur in some other species of this genus. The foliage, mostly radical, is cordate in form, with crenate margins and long-stalked. The plant appears to occur in several shades of colour, varying from rosy-purple to pale rose and white. Sown early, it will bloom the first year. It is a native of the South-western States of North America.—W. Thompson, *Ipswich.*

Anchusa capensis.—Although this has been introduced since the beginning of the present century, it may still be considered almost a stranger in our gardens, but for what reason it is difficult to imagine. Everybody admires its congener, A. italica, which is inferior in colour to A. capensis, although the flowers of A. italica are larger. Those of A. capensis surpass the blooms of Myosotis azorica in brightness, and, appearing as they do after those of A. italica, they form a desirable succession. It succeeds in such positions as are suited to A. italica.—J. T. R.

Effects of Sea Water on Land.—Mr. Reinders, from one of the German agricultural experimental stations, says:—Land that has been submerged by sea water generally proves sterile for some time, in some cases for ten to fifteen years. This can be traced to the co-operation of the three following chemical causes, in addition to the mechanical injuries produced by the inundation:—1. To the introduction of too great a proportion of chlorine salts. 2. To the hygroscopic property communicated to it, preventing it from drying properly. 3. From the formation of green vitriol or sulphate of iron, which is known to exert a very prejudicial effect upon plant growth. Land which has thus been damaged should be drained as quickly as possible, and sown with Grass and Clover and allowed to rest. Experience shows that it recovers its fertility sooner if treated in this way than if cultivated all the year round as arable land.

TREES AND SHRUBS.

HARDY FLOWERING TREES AND SHRUBS.

AT a recent meeting of the Central Horticultural Society of France, M. Alphonse Lavallée, the Secretary-general, showed flowering specimens of six varieties of rare trees from his Arboretum at the Château de Segrez, with respect to which he made the following interesting statements:—Firstly, there are two varieties of Aria—A. latifolia, and another as yet undescribed variety closely resembling this, to which he gives the name of Aria majestica: this new variety is a tree remarkable for its fine foliage and its large, white, sweet-scented blossoms, to which succeed red fruits, which produce the effect of those of the ordinary Service tree or Sorbus aucuparia. This tree has an exceptionally fine appearance, from its large and ample top, which justifies the appellation of majestica; the origin of this fine variety is unknown. It may be occasionally found in nurseries under the name of the Nettle tree of Nepaul, a name under which M. Lavallée met with it in the nursery of M. Coulombier, at Vitry. These trees are usually slow in their growth, but this variety is vigorous and grows rapidly. The next variety was Halesia parviflora, which forms a graceful tree, the general aspect of which is somewhat like that of a Fuchsia with white flowers. Unhappily this variety is capricious in its vegetation, and shows itself too apt to lose its branches; it is therefore not much to be recommended. Four varieties of Viburnum were then shown in flower, consisting of V. pyrifolium, V. Oxycoccos, V. macrocephalum, and V. Fortunei or himalayense. The first-named is a little-known variety which forms a vigorous and free-flowering bush with red fruits, but against which must be cited the drawback of the smallness of its foliage, which gives it a bare appearance when the flowering is over. The second-named is a very ornamental shrub, owing to its handsome foliage, pyramidal habit, and red fruits with which it is covered, and which it holds during the entire winter, and till the time of flowering comes round again. M. Lavallée strongly recommends this variety, and offers cuttings of it to any lover of shrub who likes to apply to him for them at the proper season. The V. macrocephalum is well known to all growers of hardy shrubs in this country as an exceedingly fine variety which should be in every collection: it was first introduced by Fortune from the North of China, which accounts for its extreme hardiness, the severest frost having no effect on it whatever. It is sometimes called V. Fortunei, but M. Lavallée has decided that this name more correctly belongs to another variety, of which he submitted specimens in proof of his assertion. W. E. G.

NOTES ON GARDEN VEGETATION FOR JUNE.*

By JAMES M'NAB.

THE weather during June has, upon the whole, been pleasant, but by no means warm. The lowest temperatures experienced were during the nights of the 7th, 12th, 13th, 16th, 17th, and 24th, when 43°, 39°, 41°, 37°, 41°, and 40°, were indicated; while the highest night temperatures were on the 4th, 10th, 21st, 26th, 27th, and 29th, when 52°, 53°, 52°, 58°, 55°, and 55°, were indicated. At this time (June 30) vegetation is still very backward; last season was considered a late one, but this year many trees are still later, both as regards leaf and flower. A few instances may be quoted to show the difference, the same plant or tree being fixed on each year for the purpose, The flowering Ash (Fraxinus Ornus) was in perfection this year on June 28; in 1876 it was so on the 15th, and in 1875 on the 7th. The common Elder (Sambucus nigra) did not show its first open flower this year till June 27; in 1876 it was as forward on the 16th, and in 1875 on the 5th. The Portugal Laurel had no flowers expanded on June 30, while in 1875 it was in full flower at that date; during the same year the Cratægus tanacetifolia was recorded as being in full bloom on June 25, while this year no flowers are yet to be seen open. The ordinary Thorns have been very full of bloom, particularly the single white and red, both being in perfection on the 25th. In the case of the Lime tree (Tilia europæa), although covered with blossom-buds, no flowers are expanded. The following trees were observed to be in a free-flowering condition on June 30, viz., double Laburnums, some white Hawthorns, scarlet-flowering Horse Chestnuts, flowering Ash, and many varieties of Sorbus, while the common Horse Chestnut, although it showed its first open flowers on June 20, they were exceedingly poor, and have been so throughout, scarcely a tree, except in sheltered situations, having perfect leaves. The large Sorbus domestica in this garden, which has been occasionally noticed for its peculiarity of flowering, has this year the west half covered with bloom, while last year it was the east half; this alternation of flowering has been observed on the same tree for several years; the tree has two main branches proceeding from a stem 7 ft. high and 5 ft. in circumference. In my report for May I stated that a peculiar yellow tint was observed on the young foliage of many trees, particularly when late in coming out. It is somewhat remarkable that the older trees of what is known as the Corstorphine Sycamores, celebrated for their early yellow foliage, which afterwards becomes green, have this year been late in coming into leaf, and were deficient both as regards colour and duration in their coloured condition. The American Oaks, more particularly the species known as the Quercus rubra, has this year been late in coming out, all the leaves having a peculiar yellow tint. Subjoined is a list of trees whose foliage is still behind on June 30, viz., Sugar Maple, Scarlet American Oak, Weeping Ash, small-leaved English Elm, Walnuts, Turkey Oak, Hornbeam, Celtis occidentalis, Ostrya virginica, Juglans alba, Tulip tree, Ptelea trifoliata, Robinias, Catalpa tree, Platanus, and Taxodium. Besides trees, perennial, herbaceous, and annual plants are very backward.* On the rock garden 336 species and varieties were counted in flower on June 30, while last year, at the same date, the number was 452 species and varieties.

List of some of the more Conspicuous Plants in Flower on the Rock Garden.

Arenaria balearica
,, grandiflora
Aster alpinus albus
Astragalus alpinus
,, leontinus
,, vaginalis
Arum Palestinum
Aubrietia grandiflora major
,, Hendersoni
Brodiæa coccinea
Campanula turbinata
,, ,, alba
Chamæbatia foliolosa
Chrysobactron Hookeri
Cyclobothra cœrulea
,, pulchella
Delphinium cashmerianum
,, nudicaule
Dianthus alpinus
,, nitidus
Erodium Manescavi
Epilobium latifolium nanum
Erigeron Roylei
Eriogonum aureum
,, subumbellatum
Erysimum helveticum
Fragaria lucida
Genista pilosa
Hæmanthus, sp. Natal
Helianthemum of sorts, single and double
Hutchinsia alpina
Linnæa borealis, Scotch
,, ,, American
Lithospermum prostratum
Meconopsis nepalensis
Menziesia polifolia variegata
Onosma echioides
Orchis foliosa
,, maculata superba
Oxytropis cœruleus
,, Lapponicus
Papaver alpinum
,, aurantiacum
Phlox Nelsoni
,, violacea
Potentilla peduncularis
Pentstemon humilis
,, Menziesi
Pernettya candida
Polemonium pulchellum
Primula scotica
,, sikkimensis
Rhododendron ferrugineum
,, ,, album
,, hirsutum
Rosa pyrenaica
Rubus arcticus
Saponaria ocymoides major
Saxifraga mutata
,, pyramidalis—and others
Salvia carduacea
Sedum spathulatum
Silene alpestris
,, maritima rosea
Symphyandra Wanneri
Trifolium alpinum
,, uniflorum
Vaccinium Mortenia
Veronica Guthriana
,, rupestris
,, pinguifolia

On the table were placed about eighty species of rare and interesting plants, cultivated in pots; amongst them were:—

Androsace lanuginosa
Arnebia echioides
Astragalus alpinus
Brodiæa coccinea
Cyclobothra alba
,, pulchella
Cyrtanthus Macowani
Delphinium cashmerianum
Dianthus alpinus
,, Henryanus
,, neglectus
Draba violacea
Epilobium obcordatum
Gentiana ornata
Houstonia cœrulea
Iris filifolia
Lilium columbianum
Myosotis alpestris vera
Nigritella angustifolia
Papaver alpinum
,, ,, aurantiacum
Pentstemon glaber
Primula scotica
,, sikkimensis
Salvia carduacea
Saponaria cæspitosa
Saxifraga flagellaris
Sedum californicum
Spraguea umbellata
Triteleia laxa
,, Murrayana
,, violacea

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* Read before the Botanical Society of Edinburgh, July 12, 1877.

* On July 13 it was impossible to procure in the fields on this side of Edinburgh specimens of Wheat, Oats, and Barley, in a state for examination at the botanical class, a circumstance of rare occurrence at this particular date.

THE COLORADO SPRUCES.

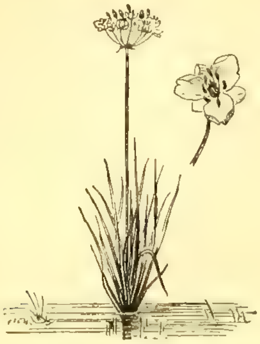
By Prof. C. S. SARGENT, Director of the Arnold Arboretum,

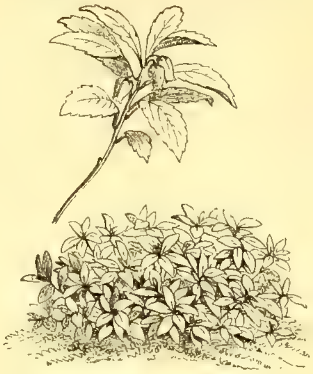
The three Spruces of the Rocky Mountains, Douglas', Menzies', and Englemann's, botanically known as Abies Douglasi, A. Menziesi, and A. Englemanni, seem destined to take such an important position in the northern portions of the United States and Europe that some account of them at the present time will be interesting and will, I hope, help to make them better known to nurserymen and planters generally. Abies Douglasi and A. Menziesi have been in cultivation for half a century, having been introduced into England from seed collected in California and Oregon, by David Douglas, a celebrated Scotch botanical traveler, whose labours and untimely death in the pursuit of his profession, the Douglas Spruce will always recall to botanists and lovers of Coniferous trees. Although these two trees grew well, and soon became popular in England, all efforts to introduce them into our extreme Northern States failed, or practically failed, as after a few years, more or less, some unusually severe winter had killed all that had been planted, and it seemed settled that our plantations must be made without reference to these really fine trees. But in 1862 Dr. C. C. Parry, to whose indefatigable journeyings and researches are due the solution of so many of the botanical problems of the Western Territories, visited the Rocky Mountains of Colorado, and sent from there seeds of these two trees to the Botanic Garden of Harvard University. From this seed a large number of plants were raised, which, with a view of testing their hardiness, have been widely distributed through Several of the Northern States, where they have stood the trial of the last dozen years, and many of them, too, very trying years to plant-life, without, so far as I have heard, a single one, whether planted on the most exposed situations of the New England coast, or in heavy clay soils in Pennsylvania, having been injured in the slightest degree. As a plant is generally more susceptible to injury from cold or drought during the early years of its life, and as our plants have passed through these first years so successfully, their perfect hardiness and adaptability to the soil and climate of the Eastern States must, I think, now be conceded. But why, it will be asked, are these Colorado trees hardy, when the same species had, up to a dozen years ago, proved so unsuited to our climate? The reason for this apparent anomaly is obvious, if we take into consideration the fact that individuals of the same species vary to a remarkable degree in their power to adapt themselves to various conditions of temperature, and that the power of an individual to withstand cold, increases in proportion to the distance at which its seed-bearing parent is situated, either from the Equator, or above the sea-level; or, in other words, our two Spruces are perfectly hardy in New England, the seeds from which they were raised having been collected at an elevation of some 8000 ft. while plants of the same species, raised from seed collected at comparatively low elevations near the Pacific coast, have almost without exception proved too tender for the climate.

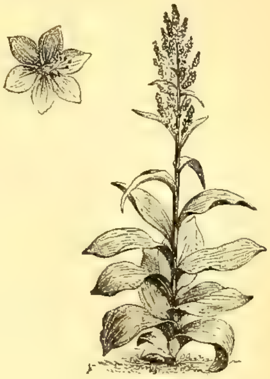
The Douglas Spruce, which botanically is closely allied to the Hemlock of the Eastern States, and which, though coarser and less graceful, it somewhat resembles, extends through California and Oregon, as far north as Sitka, and in the Rocky Mountains from New Mexico northward, growing to an enormous size on the Pacific coast, where, in favourable situations, it often attains a height of from 200 ft. to 300 ft., with a diameter of trunk of from 10 ft. to 15 ft. In the Rocky Mountains, however, its average height is hardly above 80 ft., and its growth there is slower and less productive of valuable timber. But it is as an ornamental, and not as a timber tree, that we are now considering this species; as such, few Coniferous trees surpass or even equal it, for it has thus far retained in cultivation (and some of the first trees planted in England are now over 100 ft. high), its lower branches, and close, dense, pyramidal habit; and in this it contrasts most favourably with such trees as the Norway Spruce, and many of the Spruces and Silver Firs of the Old and New World, which, however beautiful and thrifty in their young state, become either naked and unsightly skeletons, or destitute of lower branches, long before they have reached half their full development. For this reason the Douglas Spruce should be selected in preference to any other tree of which, in cultivation, I have any adequate knowledge, where it is desirable to plant a tree of pyramidal habit, which not only is beautiful in its young state, but will improve for generations.

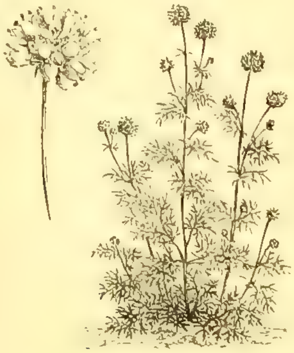
Menzies' Spruce.—The second of our species, Abies Menziesi, in favourable situations attains a height of 100 ft., and has nearly the same geographical range in North America as Abies Douglasi. It also, under various names, extends through Kamtchatka and the Amoor country to Japan. In the Rocky Mountains this tree is found at an elevation of from 6000 ft. to 9000 ft., and never forming extensive forests, as do many Coniferous trees, but scattered widely here and there, and always in low, wet situations, generally along streams at the water's edge, where its roots are constantly kept cool and moist by the mountain torrents. This natural selection of a cool, moist soil indicates under what conditions this tree can be most successfully cultivated. According to Dr. Parry, Abies Menziesi is, in the Rocky Mountains, a tree of rather an oval outline, pointing upwards with a rapidly tapering trunk. It has a thick, grey, rough bark, and its leaves are remarkably broad, stout, and very sharp-pointed; indeed, so harsh are they that it is painful to grasp one of the branchlets with the naked hand, and by this peculiarity the species can be most readily distinguished while young from several other Spruces, which in their early years have certain points of resemblance. The young plants, although of rapid growth, are remarkably compact and beautiful, especially those of them (about 20 per cent. in our seedlings) which are of a bright bluish-grey tint. In fact, these young "Blue Spruces," as cultivators are beginning to call them, are the most beautiful and valuable hardy Conifers for this climate that I know. Still, it is only in its young state probably that this species will make a desirable ornamental tree, as it has been observed that when growing naturally, the bluish tint disappears from trees over 30 ft. high, while, long before its full development is reached, loose, unsightly branches, nearly destitute of foliage, take the place of its early compact habit. This comparatively early fading of beauty is less objectionable perhaps in an ornamental tree in this country than in almost any other, and is quite compensated for, in this case, by the superlative beauty which graces its early years. As a hedge plant for this climate, Abies Menziesi presents qualities possessed by no other plant, and when it becomes, as it should before long, as common and cheap in our nurseries as the Norway Spruce, it will be used for this purpose in preference to that or any other evergreen.

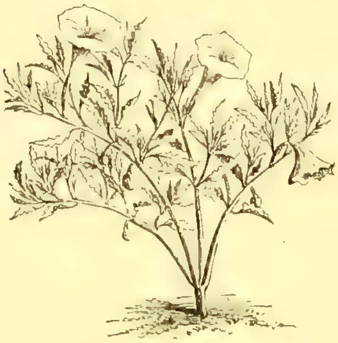
Englemann's Spruce.—Abies Englemanni, the third of the Colorado Spruces, is the most Alpine in character, forming in the southern Rocky Mountains vast forests above 8000 ft., and reaching even 11,500 ft. above the sea-level. This tree forms a shapely, tapering spire, from 60 ft. to 80 ft. high, with a trunk slender for its height, and which is covered with a thin, scaly, reddish-gray bark. In general appearance A. Englemanni resembles the Black Spruce of Eastern America, for which it was mistaken by all botanical travellers in the Rocky Mountains, until Dr. Parry detected its specific distinctions, and dedicated it to the distinguished botanist whose name it bears. Of its merits as an ornamental tree, I cannot as yet speak with so much confidence as of the two trees already mentioned, as material for a satisfactory trial has not been available. But, probably, its resemblance to one of the common trees of the East will work against its general popularity, while its Alpine character, and consequent habit of starting to grow in very early spring, will render it unfit for cultivation, save in the extreme Northern States. In St. Petersburg, as I am informed on the best authority, Abies Englemanni succeeds perfectly, in spite of the extreme cold of the Russian winters, and as heretofore the only Conifers available for planting in northern Russia have been the Scotch Pine and the Siberian Spruce, its general introduction there is considered of the greatest value and importance. By far the most valuable of the Colorado Spruces, as a timber tree, and the equal in this respect to the Black Spruce, it is not improbable that Englemann's Spruce will some day form an important element in the formation of artificial forests in Northern Europe.—"American Agriculturist."

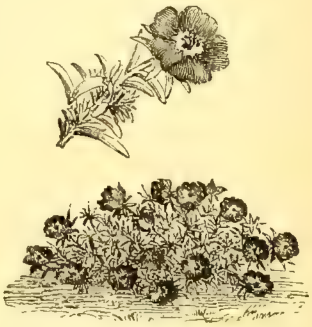

Flowering Rush (Butomus umbellatus).

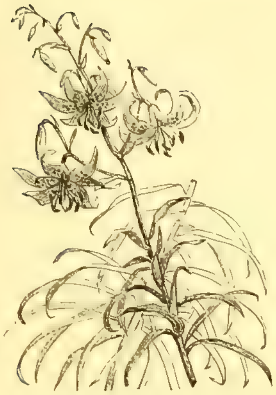

Trailing Gaultheria (G. procumbens).

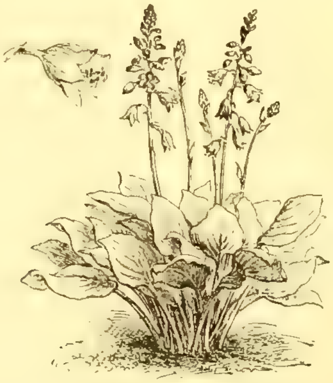

Black Hellebore (Veratrum nigrum).

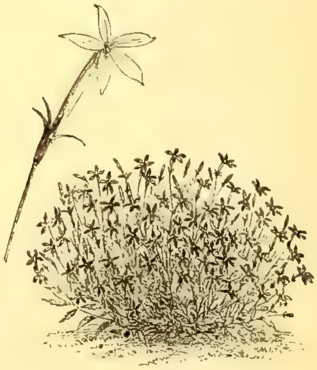

Gilia capitata.

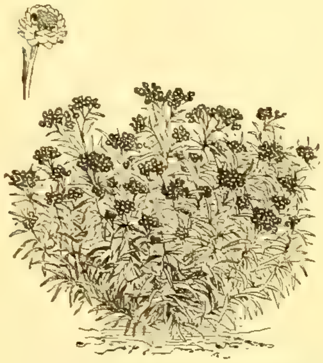

Datura ceratocaula.

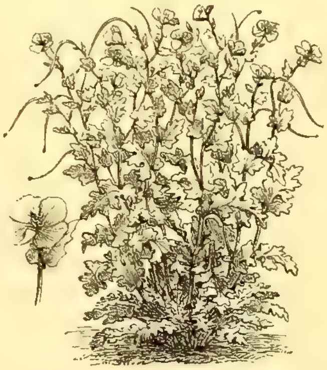

Large-flowered Purslane (Portulaca grandiflora).

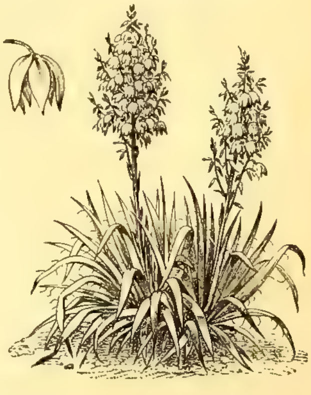

Fortune's Lily (Lilium Fortunei).


Blue Day-lily (Hemerocallis cœrulea).


Isotoma axillaris.


Common Everlasting (Antennaria margaritacea, var.).


Yellow Horn Poppy (Glaucium luteum).


Thready Yucca (Y. filamentosa).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

HARDY FLOWERS IN LONDON GARDENS.

Yuccas rank amongst the most conspicuous flowering plants now to be seen in the London parks and gardens. Y. filamentosa blooms freely even in the shape of small plants; indeed, all the hardy Yuccas deserve more extensive cultivation than they generally receive, for where there is a good collection of them, some are sure to be in flower all through the summer. Of Y. recurvata, one of the most graceful of them, there are remarkably fine healthy plants in Victoria Park. Y. gloriosa, everywhere to be met with in suburban gardens, seems to bid defiance to both dust and smoke. Yuccas may be rendered very effective even when not in bloom, by surrounding the bases of their stems with dwarf flowering plants, such as some of the Campanulas, which are now in great abundance. Nierembergia rivularis is one of the best plants which we possess at this season of the year for growing in patches on raised borders or rockwork; large beds of it in Mr. Cannell's nursery at Swanley are literally masses of bloom, and no matter how dry the weather may be, they continue to grow freely and to flower abundantly. The White Sedum anomalum grown in thick masses is now very beautiful. The Everlasting Pea (Lathyrus latifolius) is now finely in bloom, and when allowed to run loosely over old tree stumps or rock, it is much more beautiful than when trained on a wall as it often is. Irises of the Kæmpferi section are still very showy, and the Californian Lilies are also most beautiful. The Alstrœmerias—where grown under favourable circumstances, viz., in well-drained, warm, sandy soil—are now very attractive, their orange and coral tints being so distinct from anything else with which they are associated.

S.

Giant Lily (Lilium giganteum).

Flame-flower (Tritoma Uvaria).

China Aster (A. sinensis).

BEST TIME FOR MANURING ROSES.

I am not disposed to agree with Mr. Fish who says (see p. 33) that November is the best time for manuring Roses, that it "takes weeks and even months for manure or manure-water at the roots of Roses to reach their leaves or flowers." My experience is to the contrary, and I have been a successful Rose grower for several years. I have seen weakly Roses in the course of a few days gratefully acknowledge the stimulant of soot and guano-water. Mr. Fish would manure in November, because he says "the roots are abnormally active during winter." My idea has always been that the Rose required a short season of rest during winter. I have been accustomed to protect the surface of my Rose-beds with rough litter from December to March, and about the time of pruning to fork the surface over with a strong and liberal supply of wholesome farmyard manure. When the first bloom has exhausted the trees, then a judicious and even administration of liquid manure restores vigour to promote an autumn bloom; and I have frequently had Roses in the autumn surpassing in form, colour, and quality those of June. I do not know that I am disposed to any particular sentimentality, but I have now and then wondered in what fervour of poetic enthusiasm William Wordsworth would have moralized over the Roses which have gladdened our eyes since his day. Unhappy man! he "should have died hereafter." If "a Primrose by a river's brim," a "yellow Primrose" could in him raise "thoughts that lie too deep for tears," what would have been his emotion at the sight of perfect blooms of Marie Baumann or La France in late September? But to return to manure and mulching. I differ from Mr. Fish on the subject of his objection to surface-mulching. A mulch of litter is certainly unsightly, and to be avoided on our Rose-beds if possible; but in some of our hot, dry summers, when the sky is like heated brass all day, and week after week no rain falls, nothing but a surface-mulching will keep moisture in the ground. A frequent thin sprinkling of lawn mowings is sufficient, if spread over the surface before that ground becomes baked and cracked. When the ground is in that condition, a sudden supply of water requires considerable caution and consideration. A friend of mine on one occasion, a week before the local Horticultural Show, being in utter despair, purchased 500 ft. or 600 ft. of gutta-percha hose and deluged his parched Roses with cold reservoir water, and the result was he had not a bloom for the Show. Mr. Fish recommends a solution of carbonate of ammonia as an aphis wash. He says that syringing with this fluid "adds a new perfume to the Roses, invigorates their growth, and enhances their beauty." Certainly as a wash nothing could be cleaner or more convenient. Will he kindly say how much of the ammonia to the gallon of water may be safely used? C. W.

Boston.

Aplopappus ciliatus.—At first glance this plant would be taken for a Grindelia, of which genus it has the habit and the large flower-heads, but it is entirely free from the glutinous exudation which is so marked a characteristic of most of the species of Grindelia. It is a robust-growing annual, with stems from 3 ft. to 4 ft. high, branching in its upper half, the stem and branches clothed with elliptical, smooth, blunt foliage, stem-clasping and serrated, the teeth all pointed with bristles. The flower-heads are more than 2 in. across, both disc and ray being bright yellow, and very effective. It blooms throughout the autumn months, commencing in July. It is undoubtedly a desirable addition to the taller Composites, and may be treated either as a biennial, in which case the seed should be sown about August, or as a half-hardy annual, the seeds being sown under glass as early as means and appliances permit. It is a native of Arkansas.—W. Thompson, *Ipswich.*

The Virginian Creeper at Home.—I notice (see page 495, Vol. XI.), your comment upon the Virginian Creeper, concerning which you state that "there is no reason why old, dead trees in Britain should not be made as beautiful as those in the Missouri Bottoms." No doubt it will grow just as well in England as in America, but you will not have the blaze of brilliant colour from base to topmost twig which we have. I am pleased to know that this splendid climber is so well appreciated, for I made the remark in a paper (Vol. VIII., p. 233) which I sent you, "that the Virginian Creeper, overtopping the tallest trees in Southern Illinois, crimsoning the whole summit as with a glow of fire in an October sunset, is a sight never to be forgotten." The very spot where I saw it was within a few miles of the Mississippi River. This creeper is a native of New England, and grows wild in our own grounds, but brilliant as it usually is here, its colour is not to be compared for intensity with that on the Southern Illinois or Missouri Bottoms. The soil or climate, and probably both combined, give a crimson glow to the foliage which it rarely attains in our more northern clime; therefore beautiful though it no doubt is even in the climate of Britain, you must not expect to see it with the fiery brilliancy of plants of it in the Missouri Bottoms.—C. M. Hovey.

Triteleia uniflora as a Pot Plant.—Many may not be aware how well adapted this pretty little spring-flowering bulb is for pot culture. About a dozen good-sized bulbs should be placed in an 8-in. pot, using a compost of leaf-mould and turfy loam, to which may be added a portion of well-decomposed manure; pot firmly, and give a good watering to settle the soil, and then plunge the pots in a cool frame or at the back of a north wall up to their rims. During September and October place them where they may enjoy full exposure to sun and air; they may be wintered in a cold frame, where they can be fully protected from hard frosts, taking care to keep them sufficiently moist at the roots to prevent the foliage from becoming yellow, which it is apt to do if they be allowed to remain dry. When the buds begin to appear they may be removed to the conservatory or sitting-room. There is one peculiarity in the growth of this plant which adds much to its beauty when thus grown, viz., the leaves turning downwards and completely clothing the sides of the pot; in order therefore to see it to full advantage, it should be placed in a somewhat elevated position. For those who have no convenience for forcing flowers, the Triteleia thus treated is invaluable, as the slight protection alone which it receives suffices to bring it into full bloom some weeks earlier than those in the open border. —John Cornhill, *Byfleet.*

A Good Early Potato.—Among fifty varieties of Potatoes gowing here this season, I find Alpha to be the earliest of them all. It is also an excellent cropper.—R. Gilbert, *Burghley.*

Erigeron glaucus.—What can surpass in point of beauty this plant at the present time? and yet, singular to say, it is seldom met with in gardens. It thrives well in the open border without much attention, and when once established it may be propagated either by division or seed.—J. T. R.

Apples for England.—So late as the 4th of May, the "Indiana," of the American line of steamers from Philadelphia to Liverpool, took to England 1,500 barrels of Apples. Some of these were of the celebrated Pennsylvania variety, "Smoke House," which is said to be highly appreciated in England. In past time they seem to have known nothing of American Apples except "Newtown Pippin," and seem to have been astonished at the superiority of other kinds.—"Gardener's Monthly." [The writer ought to know the value of the different varieties, but it is only fair to say that nothing as yet sent approaches in flavour to the finest Newtowns.

SEASONABLE NOTES.

A cold, backward spring and a late summer are often followed by a mild, growing autumn, a circumstance to which due weight should be given when making arrangements for sowing Cabbages and other crops, to which attention must soon be paid. It is well not to be in too great a hurry, however, or the plants may "bolt."

Watering.—The common-sense way of doing this in the open air is to pour it on the land between the crops in the evening only, giving sufficient to moisten the soil to the extremities of the roots, and the next morning scattering an inch or so of short manure, rough leaf-mould, old tan, or dry soil over the surface, having previously just loosened it up with the hoe. Where such precautionary measures for lessening evaporation are taken, once a week will be sufficient to water all crops. If watered frequently, liquid manure should be given occasionally, to compensate for the waste of manurial matters in the soil from so much water being so rapidly passed through the upper stratum, to be as rapidly evaporated again by the hot sun the following day. Never use hard pump-water until it has been well exposed to the sun and air, and hoe up the surface two or three times a week. Few seem to realize the benefit derivable from a frequent stirring of the earth's surface in dry weather as a means of retaining moisture in the land and keeping the root-run cool.

Planting-out Broccoli.—The main crop of Broccoli should have been planted out and established in some open situation, and have space enough allowed it to induce a dwarf, sturdy growth, keeping in mind the average growth which each kind usually makes. The Leamington and Eclipse are two excellent late kinds, that will not disappoint if obtained true; they come in in succession as I have set them down. There is yet time to plant them out for a late spring crop; Eclipse will quite meet the earliest Cauliflowers at the end of May or beginning of June, but it should be got out at once to obtain good heads. Early planting usually leads to firm growth, with its consequent immunity from frost in winter. That indispensable kind, Veitch's Autumn Self-protecting, should be planted on rich land, as should also the Autumn Giant Cauliflower.

Planting Celery in the Trenches from the Seed-bed.—It is not customary to do this, but in certain places it is not a bad plan; of course where it is done the seeds should either be sown thinly or the plants thinned out to 2 in. apart in good time before they crowd each other. No doubt transplanting increases the numbers of fibres or feeding roots, and keeps them nearer home, so to speak, than if otherwise treated, and on good land where the food supply—both liquid and solid—is ample, it has a beneficial tendency; but in places where water is scarce and difficult to apply, keeping the roots near the surface is not an unmixed good. We cannot transplant anything without checking its growth, and there are places and seasons when the fewer checks given the better.

Sowing Lettuces for Winter.—From the middle of July to the 25th is a good time to sow a good breadth of Brown Cos, Hick's Hardy Green Cos, Hammersmith, and Tom Thumb Cabbage Lettuces for winter. Select an open situation, where the land is in good heart; if the weather be dry, soak the bed with water before sowing the seeds, and cover with dry soil.

Radishes.—These, at this season, are often difficult to obtain crisp and good, and as the space occupied by them in comparison with other crops is small, we find it best to make up special beds for them, with rich, light soil, on a cool border. The waste soil from the potting-shed comes in well for this and similar purposes, and where many bedding plants are grown the temporary sheltering places used for them may be employed for this purpose; under such treatment they grow rapidly, and are mild in flavour. The French Breakfast Radish is the best variety for sowing in summer.

Potato Disease.—This has made its appearance in several gardens in this district. Everything now, so far as regards the future crop, depends upon the weather. If we have heavy rains and the usual close, heavy, oppressive atmosphere that generally accompanies wet weather at this season, the disease will, I fear, be more than usually destructive in consequence of the lateness of the growth of the crop. In all cases where the crop is fully grown, early lifting will be desirable. E. Hobday.

A Delicate Tomato Salad.—Many who like Tomatoes prefer them most of all in a raw state, as salad, served with various combinations of vinegar, oil, and mustard—some using only a little vinegar, others using no vinegar, but a combination of oil and mustard. A great improvement on any of these is made by using the juice of a Lemon only; in this way good Tomatoes, skinned by putting them in scalding water for a minute, allowed to cool, cut into slices, and a good Lemon squeezed over them, form one of the most grateful and wholesome dishes obtainable in summer. Those who know and appreciate the Tomato in this and similar ways, will be prepared for the statement that no vegetable product ever introduced to garden culture is likely to prove more useful to mankind. In countries where it is well known and grown, it is already far more important than the Potato; therefore all who have the opportunity would do well to help forward its culture in various simple ways.

PROPAGATING ROSES FROM CUTTINGS.

PERHAPS the easiest and at the same time the most successful method of propagating Hybrid Perpetual and other Roses from the old wood is this:—As soon as the leaves fall cut the slips into pieces of about four or five eyes each, using of course a sharp knife, so as to make a clean cut—not a pair of shears, which bruises the end of the slip. It does not matter where the cut is made, provided it is a clean cut. The slips may then be planted pretty closely in boxes 3 in. or 4 in. deep, leaving one or two good eyes above the surface, in a soil composed principally of good clean sand free from salt, to which a small quantity, say one-fourth, of loam and leaf-mould may be added. Water well to settle the soil close round the base of the slip, and the boxes may then be placed in a cold frame for the winter. Frost must be rigidly excluded as well as any undue excitement by sun-heat—a temperature as nearly 40° as possible during the winter will answer. If any commence to grow before the base of the slip has formed a good callus, farewell to all hope of its ever making a plant; it may grow as long as the sap stored in the slip keeps it alive, but will then die. Towards spring any material used to keep out frost may be removed, and light and heat gradually admitted until good growth is secured, when the slips should be carefully taken up and either placed separately in small pots in a good rich soil, or about 2 in. apart in boxes, and the frame kept close and moist for a few days to prevent their wilting. After being gradually hardened off they may be planted out at any time after the middle of April, will give a few blooms the first season, and will make plants double the size in the autumn of those propagated in winter or spring from the young or green wood and raised in the greenhouse. If the amateur wish to increase his stock of a new Rose, of which he can only spare a few slips or eyes, root-grafting may be resorted to. A few good strong roots of any free-growing Rose being secured and cut into about 4-in. lengths, a single eye of the Rose to be propagated should be inserted near the top of the root, as in side-grafting, or if the root-stock is large enough as in cleft-grafting, the junction covered with grafting-wax, and the whole then treated as recommended for slips. The amateur need not get discouraged if success do not attend his efforts the first time—we have seen 99 per cent. grow one year, while not over 25 per cent. would reward our efforts at another; but the cause was traceable to neglect, not to the system.—"Forest and Stream."

QUESTIONS AND ANSWERS.

Harvesting Ornamental Grasses.—I have a collection of ornamental Grasses, and wish to prepare them for making pretty ornaments for the house in winter. Will you kindly tell me when to gather them, and how to dry and prepare them for the purpose just named?—T. G. H. [Gather them just before the flowers are fully open, and dry them in an airy loft or shed.]

Peach Stones Splitting.—Allow me to say in answer to "C. J. H." (see p. 52) that my impression is that the splitting of Peach stones arises from too much water at the roots rather than too little, as he appears to surmise. Peach trees should always be well supplied with water while the fruit is swelling, but if given when it is ripening, or just previous to ripeness commencing, I have invariably observed that the stones split.—W. H.

Flowerless Allamandas.—On the roof of an Orchid-house we have some Allamandas which we cannot induce to flower; we cut them back and repotted them last spring, and they have made growth fully 4 ft. long, but no appearance of bloom. Can it be the shading on the roof requisite for the Orchids which prevents their blooming?—A GARDENER. [In order to flower Allamandas successfully, they should be removed when growth is completed to a somewhat cooler and more airy house to ripen their wood.]

Bananas Cracking.—I have under my charge a house of Bananas, a plant of which showed flower last autumn; it kept swelling its fruits slowly all winter and spring, and lately some of the pips have begun to crack and decay, a circumstance which has induced me to cut the fruit and hang it up in a vinery where the atmosphere is kept pretty dry. Shall I be able to ripen it? and how can I prevent the fruits of the others from cracking in order that I may be able to ripen them on the plants?—A GARDENER. [Bananas will ripen and acquire good flavour hung up in any warm dry place. As soon as the fruit shows signs of changing colour the house should be kept as dry as is consistent with the health of the plants, maintaining at the same time a free circulation of air. Excess of atmospheric moisture, especially at nights, and a confined atmosphere, cause cracking.]

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY'S SHOW.

JULY 17.

THIS meeting was held in the Council Room, which is a much more appropriate place for small exhibitions than the Conservatory. On this occasion the principal feature was a collection of Pot Vines, shown by Messrs. Lane & Sons, Great Berkhamsted, and consisted of six plants, each bearing from seven to ten large bunches, which were acknowledged by the Fruit Committee to be the best ever exhibited. Several bunches of Black Hamburgh in this collection weighed no less than 4 lb. Foster's Seedling was shown in capital condition, the berries in this case being of a transparent amber colour: to these a silver medal was awarded. A bank of Balsams as grown for market, shown by Mr. John Reeves, Acton, was much admired on account of the dwarf compact habit of the plants, and the remarkably large and well-formed blossoms which they bore. Messrs. Veitch & Sons showed a group of Begonias, in which the plants were unusually well grown, and profusely flowered; they consisted of such kinds as Stella, the large and brilliant orange-scarlet-flowered Acme, Monarch, and Charles Scorer; the dwarf-growing B. Davisi was shown in good condition, the flowers being of a most brilliant scarlet.

First-class Certificates.—These were awarded to the following new and rare plants:—

Begonia, Charles Scorer (Veitch).—A dwarf-habited kind with large deep-green leaves of good substance, thickly beset with stiff wiry hairs. The flowers, which are produced in abundance on stout fleshy stalks from 6 in. to 8 in. long, are of a dark rich crimson colour.

Begonia, Monarch (Veitch).—A robust-habited kind with large glossy green leaves, and flowers with stiff, waxy, vermilion petals, and conspicuous golden-coloured stamens.

Hydrangea, Thomas Hogg (Veitch).—A pure white-flowered kind, on several occasions alluded to in THE GARDEN.

Odontoglossum miniatum (Mills).—A kind with stiff, deep green foliage. Small plants bearing very large strong flower-spikes, thickly beset with crisp, five-petalled blossoms, the colour of which closely resembles that of Oncidium crispum.

Croton, Queen Victoria (Williams).—The result of a cross between C. Weismanni and C. interruptum. It is of medium growth and free-branching habit; the leaves are from 9 in. to 12 in. long, and about 2 in. broad, the ground colour being golden-yellow, beautifully mottled with green; the margin of the leaf is unevenly banded with carmine. A very desirable kind.

Clove Carnation, Mrs. Matthews (Turner).—A free-growing kind which bears beautiful white, waxy-petalled, Gardenia-like flowers of exquisite fragrance.

Lathyrus latifolius magnificus (Parker).—A kind which bears large trusses of rosy-purple flowers.

Echinocactus grandicornis (Croucher).—A large spiny Cactus, which, on account of its singular appearance, cannot fail to be a favourite with all lovers of this tribe of plants.

Miscellaneous Subjects.—Messrs. Veitch & Sons showed a basket of small plants of the now rarely seen Lisianthus Russellianus, bearing abundance of large flowers, well adapted for conservatory or greenhouse decoration; the same firm also showed Crinum erubescens in flower, and a basket of Eulalia japonica zebrina in good condition. An excellent group of plants came from Mr. B. S. Williams, Holloway, amongst which were fine examples of the Crested Woodwardia (W. radicans cristata) and Adiantum palmatum and Sarracenia purpurea major. An exquisitely coloured specimen of Croton Queen Victoria also came from the same exhibitor, and was greatly admired, as was also Lobelia Lilac Queen, a compact-growing kind, forming a carpet of neat lilac-coloured flowers. Mr. Selwood, gardener to the Duke of Westminster, Eaton Hall, Chester, showed a remarkably healthy specimen of Dendrochilum filiforme, bearing nearly one hundred drooping spikes of greenish-yellow blossoms. Sir Trevor Lawrence furnished an unusually well-flowered plant of Lælia Brysiana, and a specimen of Brassavola Digbyana bore seven large, peculiar, greenish-white fringed flowers. Mr. Noble, Sunningdale, showed trusses of Rose Queen of Bedders. Mr. Turner sent a Rose named Penelope Mayo, a kind like Marie Baumann, with very distinct deep green leaves. A small group of tuberous-rooted Begonias came from Mr. Pithers, Munster House, Fulham, amongst which were noticeable finely-flowered plants of B. Illuminator and refulgens. Messrs. Wm. Paul & Sons contributed a collection of new English seedling Roses, not yet in commerce, amongst which were noticeable several very distinct and desirable kinds: amongst them Red Dragon was much admired on account of its brilliant reddish-crimson blossoms which are freely produced on climbing branches clothed with large green leaves. May Quennell, of which we have before made mention, was also in good condition. From the same firm also came a collection of Roses, raised at or sent out from the Waltham Nurseries. Amongst them were very fine examples of Prince Christian, Lord Macaulay, and Glory of Waltham. Mr. Wilson, Weybridge, sent a collection of Lilies in good condition and a group of cut blooms of English Irises came from Messrs. Barr & Sugden. A group of Old Man Cactus came from Mr. Croucher. Mr. Barr showed a collection of Lilies, amongst which were some remarkably well-coloured flowers of all the species at present in bloom. A group of well-grown decorative plants came from Mr. James Puttick, Acton, which considerably enchanced the gaiety of the exhibition. Mr. Cannell, Swanley, sent a collection of Mimuli and Sweet Williams which were of great merit. A vote of thanks was also awarded to the same exhibitor for boxes of cut flowers of very fine Zonal and Double Pelargoniums; amongst these were kinds entirely distinct from any we have before seen, having very large flowers of the brightest colours. Messrs. Downie & Laird, Edinburgh, sent a stand of seedling Pansies, amongst which were many well-formed flowers. Mr. Dean sent a basket of mauve Beauty Stock, a dwarf variety of branching habit, the flowers of which are of a lively mauve colour, and borne thickly on stout pyramidal stalks. Both for garden and pot culture this Stock is well worth attention.

Fruit and Vegetables.—Very fine examples of Belle de Choisy and Bigarreau Napoleon Cherries came from Mr. Miles, gardener to Lord Carington, Wycombe Abbey; and Mr. Burnett, The Deepdene, Dorking, sent good dishes of Peaches. A Queen Pine weighing from 5 lb. to 6 lb. came from Mr. Ollerhead, Wimbledon House. Messrs. Carter & Co., Holborn, sent plants of Little Wonder Pea heavily laden with pods, each containing seven or eight very large Peas; for field and garden growth this is one of the best Peas which we have seen for a long time. Examples of a new Pea named Sequel came from Mr. J. Hardy, Bures, Essex. Mr. Myatt, Deptford, showed two dishes of French Bean Sir J. Paxton. Mr. Bull, Chelsea, sent a brace of Cucumber Excelsior, a kind with symmetrically-shaped fruit 24 in. long, and well adapted to exhibition purposes.

NATIONAL CARNATION AND PICOTEE SOCIETY.

July 18 and 19.

This exhibition, which opened on Wednesday last in the Royal Aquarium, Westminster, was a very attractive one, the cut blooms of both Carnations and Picotees, as well as a display of Roses, being neatly arranged on tables surrounding the fountains at each end of the building—positions well adapted for the purpose. The stands of brightly-coloured Verbenas shown by Mr. Cannell and Mr. Turner were very effective, as was also a table occupied by Tea Roses. In the class for twenty-four Carnations there were five exhibitors. The best blooms came from Mr. Turner, Slough, and Mr. Douglas, Loxford; the latter exhibitor had magnificent specimens of the creamy-white and crimson-petalled Clipper, the rose and white-flaked Sarah Payne, and the well-formed Lovely Ann, a beautiful magenta-petalled flower striped with white. These were associated with the purple and white Premier, and a variety named Dreadnought, the petals of which are equally striped with scarlet-maroon and creamy-white. Mr. Turner had a well-arranged stand containing compact blooms of the bright rose and white-flaked Sybil, and the white and purple-spotted Florence Nightingale. In this stand we also noticed a very conspicuous bright scarlet and white-flowered kind named Sportsman, and well-shaped blooms of Ajax, a deep mauve and purple-petalled kind marked with white stripes and spots. In the class for twelve blooms Mr. Douglas had the best stand, in which were good examples of True Briton, Rifleman, and the kind named Premier; with these were associated good blooms of similar kinds to those mentioned in the other class. Mr. E. S. Dodwell also showed good blooms of James Merryweather and John Kent, together with the deep rose-flaked J. D. Haxtall, and others. Amongst other exhibits in this class were noticeable fine examples of a kind named Superb, a round bloom, with scarlet and white-striped petals, Samuel Moorman, and a few excellent seedling kinds as yet unnamed. A very large bloom of James Douglas was much admired on account of its large stiff petals, which were slightly striped, and edged with deep mauve. Mr. Ware, Tottenham, sent a stand of yellow-ground Picotees, amongst which Goldfinch, a light yellow-petalled kind, very slightly edged with scarlet, was very conspicuous, as were also the elegantly-marked examples of Falkirk and Seraph. In the class for twenty-four Picotees, Mr. Douglas again held the first place. Amongst his blooms were beautiful examples of Ann Lord, an ivory-white-petalled kind, delicately edged with pink; Lord Valentia, a pure white well-formed flower, regularly edged with scarlet. Other noticeable kinds were Miss Small, and an elegant light pink-edged kind, named Edith Dombrain. Mr. Turner, Slough, had likewise remarkably chaste blooms of Peeress, a seedling of his own, with well-formed stiff white petals, heavily edged with deep chocolate. Leonidas also was a good sort, with a beautiful edge of clear purple. Miss Wood, a magenta-edged kind, might be used with advantage in bouquets, as might also Alice, Frances, and Isabella. Mr. Dodwell and Mr. Ware showed in this class admirable examples of kinds suitable for pot or border culture. In other classes for smaller quantities, blooms of equal excellence were shown. The centre of the table containing the stands just alluded to was furnished with a row of Carnations and Picotees in pots from Mr. Charles Turner. Amongst these we noticed The Bride, a very large pure white kind with fimbriated petals; a deep rosy-pink variety named Flora's Garland; and Elysian Beauty, a kind with well-formed flowers of a most beautiful pink colour. From the same exhibitor also came fine plants of Lilium auratum, some of the single stems of which bore from twelve to twenty large and finely coloured blossoms, which added greatly to the effect of the Show. Mr. Turner likewise showed well-flowered plants of his new Clove Carnation, Mrs. Matthews, a description of which will be found in our report of the Royal Horticultural Society's Meeting. In the class for Selfs and Fancies, Mr. Turner had the best twenty-four blooms, amongst which were several seedlings, as well as new named sorts. Amongst the former we noticed a large flower with broad deep scarlet petals, which set off to advantage the large pure white blooms of The Bride, the bright mauve Cremorne, and the delicate pink Flora's Garland. Mr Ware, Tottenham, had a good stand, consisting of well-formed self-coloured kinds, amongst which were a very bright scarlet fringed-edged kind named Glory, a fine yellow variety named Mr. J. Reeve, and a very dark kind called Hindoo, admirably adapted for bouquets. In the same class Mr. Douglas showed fine blooms. In the class for twelve Mr. Turner had excellent blooms, amongst which were noticeable good examples of the deep mauve Ajax, the pink Elysian Beauty, and other attractive kinds. Mr. Dodwell had also a capital stand, in which was a remarkable dark velvety-maroon kind unnamed. Mr. Ware, Tottenham, sent stands containing eighty-four bunches of Carnations and Picotees, both of which were much admired. The prize for the premier Picotee in the Show was awarded to Mr. Douglas for a large and finely-formed bloom of John Smith, a smooth, broad-petalled kind, conspicuously edged with dark chocolate. Of single specimens, which were numerous, the best came from Mr. Turner and Mr. Douglas.

Cut Roses.—These were fairly well represented, many of the blooms being of unusual excellence. The best stand came from Messrs. Cranston & Co., who had a fine display of brightly-coloured, fresh-looking blossoms, effectively surrounded by abundance of deep green leaves. Amongst the most conspicuous were good examples of the deep maroon velvety-petalled Jean Liabaud, the pink-coloured Miss Hassard, very large blooms of the rosy-purple Mme. Chas. Wood. These were effectively associated with Duke of Edinburgh, well-coloured blooms of François Michelon, and Souvenir de la Malmaison. Mr. Cant, Colchester, had good blooms of Countess of Oxford, and the golden yellow Madame Hippolyte Jamain, noble blooms of Alfred Colomb (still one of the best of its class for exhibition purposes), and highly-coloured flowers of Baroness Rothchild. Messrs. George Paul & Son, Cheshunt, likewise showed fine blooms. In the class for twenty-four varieties, three trusses of each, there were six exhibitors, among which Messrs. Cranston were again foremost, with beautiful blooms of similar sort to those already mentioned. Mr. Turner, Slough, showed examples of Sir Garnet Wolseley, the brilliant scarlet Duke of Edinburgh, and Chas. Lefebvre—these were supported by fine examples of that most useful of all white Roses, Niphetos, the golden-yellow Belle Lyonnaise, and the blush Mme. la Baronne de Rothschild. The best stand of twenty-four single trusses came from Mr. Corp, Oxford, who showed Captain Christy and Louis Van Houtte. In the same class ten more exhibitors also staged remarkably fine blooms, considering the wet weather to which they have lately been subjected; amongst them were good examples of Princess Beatrice, Marie Van Houtte (a beautiful creamy-yellow, the outer petals of which are delicately marked with pink), and Madame Charles Wood, the latter better shown than we have seen it before this season. An extra prize was deservedly awarded to Mr. William Corp for a collection of Rosebuds grown on the seedling Brier; for button-hole or other bouquets these are unsurpassed, and this exhibition afforded an excellent opportunity of noting the most suitable kind for such purposes. Ma Capucine had well-formed buds of an orange-scarlet colour, and Madame Falcot still retained its position as a button-hole Rose. Clara Salvan is a good white kind; and the best blush was David Pradel. In the amateurs' classes, the best box of twenty-four blooms came from the Rev. N. Pochin, Leicester, who had very fine specimens of Maréchal Niel, Mdlle. Marie Finger, well-coloured examples of Monsieur E. Levet, La France, and Reine de Midi. An excellent collection also came from Mr. Jowitt, who had beautiful examples of Louis Van Houtte, François Michelon, and the buff-coloured Catherine Mermet. In a stand shown by Mr. Pemberton Romford, we noted remarkably bright-coloured blooms of Reynolds Hole and Duke of Edinburgh. The best blooms of Marquis de Castellane and Madlle. Marie Rady came from Mr. R. N. G. Baker, Heavitree. In the classes devoted to Tea Roses, the best stand of twelve blooms came from Mr. Cant, who had beautifully-formed, half-expanded buds of Madame Villermoz, Souvenir d'un Ami, and others. The finest and best-coloured examples of Maréchal Niel which we have seen anywhere this season came from Mr. J. Tranter, and grand examples of Souvenir d'un Ami were furnished by Mr. Turner. Mr. Cant showed blooms of Alfred Colomb, richly-coloured, and fine in form, each surrounded by its own foliage. From George Paul & Sons came very perfect blooms of the dark, velvety, brilliant crimson-tipped Horace Vernet, Duke of Edinburgh, and Marie Baumann, the last in excellent condition.

Miscellaneous Subjects.—Amongst Mr. Cannell's Verbenas were Blue Boy, a large-flowered, deep blue sort of good substance; a kind named Star of Erin, with flowers as large as those of a Phlox, of a delicate blush colour; and a brilliant scarlet variety named Basilisk, the last very attractive; Mr. Turner, Slough, also furnished stands of Verbenas, amongst which were some brilliantly coloured kinds. Messrs. Lane & Son, Berkhamsted, exhibited six pot Vines, which are fully noticed in our report of the Royal Horticultural Society.

Pine-Apple Nursery Fete, in Aid of St. Mark's Church Enlargement Fund,—This, which took place the other evening in the conservatory and grounds of the Pine-apple Nursery, Maida Vale, was highly successful, the entertainment being of an unusually comprehensive yet select character. The scene on entering the conservatory was singularly picturesque. Coloured lamps led the eye down long vistas, amid fine-foliaged plants of large size. Above and around were quaint-looking Orchids, the curious scarlet Flamingo-plant, and many others. Beautiful and imposing, however, as was the plant display; other departments were not less interesting. A large tent was devoted to table and other decorations. In the trumpets of the March stands we observed Wild Teasel, with its thorny hooks, and the commoner Grasses, too, were much used, and with good effect. These and other varied attractions kept a brilliant assemblage fully entertained until a late hour.

No. 297.] SATURDAY, JULY 28, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

PASSIFLORA EDULIS AS A DESSERT FRUIT.

THERE are times and seasons when a few dishes of tropical fruits greatly help the dessert. The Banana, Guava, Cape Gooseberry, and the Edible Passion fruit are all easily grown; they produce fruit freely, and with great regularity, and foremost among them for real usefulness is the Passiflora edulis. I have grown this Passion-flower in a cool house, but, although it grew and fruited freely enough, the fruit had a very thick rind, and was faulty in other respects. Planted out in a pit in a house where the night temperature does not fall much below 60°, and where the roots can enjoy a little bottom-heat, I have always obtained the best results. The main branches should be trained thinly under the roof near the glass, and on the back wall if in a light position, and the young fruit-bearing shoots may be trained less rigidly or be allowed to hang down loosely if space permit. A very large border is unnecessary; a brick-built partition about 2 ft. square will in most cases be ample. Turfy loam and peat or leaf-mould in equal proportions, and a good sprinkling of charcoal will suit it well. The latter will be useful in maintaining the necessary porosity in the soil, as, during the growing and fruiting seasons, a liberal application of water will be necessary, and occasional applications of soot-water, or some other form of liquid manure, will be beneficial, especially when the plants are heavily laden with fruit. When quite ripe the fruit has a dark purple colour and makes a very handsome dish, and if it be gathered before it is quite ripe and preserved whole in sugar it is delicious, and may be had for winter use when the ripe fruit is not in season. Unlike the Granadilla, this Passion-flower sets freely without artificial fertilization—at least, I have never found it necessary to resort to that in order to secure a good crop. E. HOBDAY.

NOTES FROM KEW.

DURING a recent visit to Kew, we noted a few plants particularly interesting, either on account of their beauty or rarity. They are here mentioned in the order in which we met with them. In No. 4 (the house for which the Director proposed to buy common plants), there is nothing worthy of special notice, except perhaps a plant of Mandevilla suaveolens on one of the rafters, and a good example of Sollya heterophylla on one of the pillars. The first compartment of the new range is gay with tuberous-rooted Begonias. In the third division we found Spigelia splendens, the fine, dark red spikes of which make it welcome in any collection. Its native country is unknown. A good idea of its size and habit may be obtained by consulting the coloured figure of S. marilandica, published in THE GARDEN for March 3, 1877. Juanulloa parasitica, a Peruvian, epiphytal, Solanaceous plant (which, however, does well in soil), is very showy, on account of its large, rich, orange-coloured calyxes. Tinnea æthiopica is well worth growing; it is a shrubby labiate, with dark maroon flowers with the odour of a Violet. We owe its introduction to this country to the ill-fated Mdlle. Tinné. On one of the rafters of the Victoria House there is a splendid Brazilian Bignoniaceous climber in fine condition; its large, chrome-yellow flowers are produced on long racemes, and resemble some species of Allamanda. The old Lily-house contains several good things. Cyperus pseudo-giganteus, a recent introduction from tropical America, is worthy of extended cultivation; it may be called a small edition of the Paper-reed (Papyrus antiquorum); it is nearly 5 ft. high, but the numerous branches of the loose, mop-like head are erect or ascending, not deflexed or pendulous as in that plant; it is a beautiful and graceful species. Monochoria vaginalis, an Indian aquatic, with lanceolate-cordate leaves and hollow foot-stalks, is attractive both on account of its leaves and flowers. The latter are of a warm blue tint, in umbel-like heads of from ten to twenty; the individual flowers measure nearly 1 in. across. It is also interesting on account of the many virtues with which the plant has been credited. The natives say that it is a certain remedy for liver and stomachic complaints, toothache, &c., and when young it is eaten as a salad. The Rose-apple of the Malays (Jambosa malaccensis) is now in flower in the Palm-house; its very numerous blood-coloured filaments render the otherwise somewhat inconspicuous flowers very attractive. Goethea strictiflora is too pretty to be overlooked; the flowers have deep red bracts, and are produced in abundance on the stems; the plant flowers in a young state, and apart from the associations connected with its name, is well worth having on its own account. The large plant of Ptychosperma Cunninghami (a Palm much better known under the name of Seaforthia elegans) is in fruit; the infructescence springs from below the leaves, about 30 ft. from the ground, and the coral-like fruits contrast well with the drooping, whitish branches on which they are seated. The winter garden possesses a fine specimen of the Pepino of Valdivia—Philesia buxifolia; at the time of our visit there were about 100 of its handsome Lapageria-like flowers expanded; it is planted out on the rockwork behind the large Australian Royal Fern (Todea barbara), and the conditions altogether seem to suit it admirably. In the herbaceous department there are several very handsome Erigerons and Inulas. Asteriscus aquaticus ought to be more generally known; it is a charming yellow Composite, from 1½ ft. to 2 ft. high, and very floriferous. The South European Senecio Doria is a magnificent species of this enormous genus; it figures here more than 7 ft. high, and its large, glossy leaves, afford a fine contrast to its fine yellow flowers. S. sarracenicus, too, ought to be more generally known; it is little more than half the size of the preceding, yet it is a fine species, and ought to be seen in gardens much more frequently than it is. In conclusion we may observe that the nomenclature in this department leaves much to be desired.

Cacti at Port Elizabeth, South Africa.—I have seen your notes on Cacti (p. 285, Vol. xi.), and particularly observe that your damp climate is more injurious to them than the cold. Even in this dry hot climate we find such subjects as the Epiphyllums and the Rat's-tail Cereus very apt to damp off on their own roots. But any of the family grafted on the large night-flowering Cereus grow amazingly fast, and can take any quantity of water, provided they are well drained. I have now a plant of Epiphyllum truncatum violaceum, from which I removed a couple of weeks ago over 100 faded blooms, leaving some still expanded. It was grafted on the night-flowering Cereus about two-and-a-half years ago. Rat's-tail Cactus in three years' time, if grafted on this stock, will produce a regular mop of tails 4 ft. or 5 ft. long and twice as thick as on its own roots, yielding two crops of flowers in the summer, the principal crop lasting several weeks and producing a perfect blaze of colour. The operation of grafting is very simple; a slit in the point of the stock, the scion pared into a wedge and inserted, and a thorn to keep it in its place are all that is needed. The culture, too, is very easy. Plenty of root-room and good soil well drained, and then you may water or neglect the plant without hurting it. I have found by experience that the top of the stock must not be cut off square before grafting.—W. C. E.

Liliputian Rhododendron Plants.—At the Horticultural Exhibition at the Palais de l'Industrie last May, the public had an opportunity of witnessing the results of the method which we do not hesitate to call "new," although assisted by an old one. Up to the present it is quite exceptional, still there is every reason to believe that it will become general and popular, being both simple and inexpensive. M. Moser, of Versailles, was the first to exhibit Rhododendrons cultivated in this way. Compared with the usual Rhododendrons, they are Liliputians of a decidedly new kind, of which the whole body disappears under one enormous head of flowers. These plants were cultivated in small pots, the stems measuring about 5 in. in height and terminating in an enormous display of flowers. As the varieties were very good and numerous, they presented a magnificent *coup d'œil,* forming as it were a carpet of dazzling brilliancy. The following is the mode of culture:—During autumn when the buds are well formed, good varieties of Rhododendrons are chosen; then some branches bearing strong buds are taken from the older plants, grafted on small stocks, and worked in the usual manner. When this is effected, the plants are placed in a cool greenhouse, the temperature of which is kept just above zero. They are left in this state until the following spring, when, as if dealing with mature plants, they are treated according as the use for which they are destined may demand. They are left to flower naturally, unless required early, when they must be forced. An advantage of this method is that the plants can be employed for the decoration of small apartments, such as boudoirs, where only vases of small size can be placed. This style of cultivation is still in its infancy, and is no doubt capable of much improvement. Early kinds grown in this way would be very welcome as forced plants.

Fuchsia coccinea.—Mr. Williams (see p. 52) will find the history of this Fuchsia fully given at p. 284, Vol. IX. of THE GARDEN.—H.

NOTES OF THE WEEK.

The Fruit Crops.—From the reports on this subject obligingly furnished by our correspondents, and printed in detail in the present number of The Garden, it will be seen that most kinds of hardy fruits are this year a failure. Apples are in some few places a fair crop, but they are thin generally. Pears and Plums appear almost everywhere to be a failure. Wall fruits are also unsatisfactory, but in some districts there is an average crop of Peaches and Nectarines. The cause of failure in our fruit crops this year is by many attributed not wholly to the unfavourable spring which we have experienced, but in a great measure to the sunless autumn of last year, which was unfavourable to the perfect ripening of the wood. Small fruits of all kinds appear to be everywhere abundant, though in some cases inferior in quality. Apples are, however, the fruits which most concern us, and although immense quantities may be expected from America, the prices will probably be very high. The reports we print will be of great value to fruit-tree planters, showing as they do the kinds that succeed in good and bad seasons alike, and under different conditions and situations. Our Irish, Scotch, and English returns received too late for publication this week will appear in our next issue.

Tomatoes for Profit.—Since Tomatoes have become so popular English growers have paid more attention to their culture, with the view of getting them into the market early, but notwithstanding their efforts in that direction, both from America and from the Continent come large supplies of good Tomatoes, quite as early, or even earlier, than English cultivators can supply them. This has of course the effect of lowering the prices considerably, and we learn that during this month good samples of English-grown fruit have only realised about 1s. 6d. per dozen, and smaller ones 6d. per lb. This, however, does not seem to have greatly affected prices in the retail trade, for good Tomatoes cannot be had in the market for less than 4d. each, and very small ones fetch 2s. per lb. These prices are of course beyond the reach of the majority of people, who, we fear, will never be supplied with either good fruit or vegetables at reasonable prices until a more direct communication exists between buyer and grower. Considering that Tomatoes can be preserved in various ways, we see no reason why such high prices should be asked for them in the market, for the same provision against loss to the salesman exists in the case of Tomatoes as in that of Mushrooms, which latter are made into catsup immediately they are found to be unsalable, and the former could be made into sauce, and with a profitable result.—S.

Hardy Begonias at Chelsea.—The usefulness of tuberous-rooted Begonias for pot culture is already fully recognised, but as border plants our experience of them is but limited. Now, however, when improved kinds have become numerous, it is not difficult to select varieties wherewith to adorn our flower gardens during the summer and autumn months. Messrs. Veitch & Sons have now in their nursery a collection of Begonias which have withstood the past winter uninjured, and which now present a very attractive appearance. Such kinds as Monarch, Vesuvius, Acme, and Emperor, are strong-growing, compact kinds, well suited for large beds or borders; then there are B. rosæflora, intermedia, Sedeni, and others of a dwarfer character, possessing distinct colours, and the dwarf B. Davisi, a Continental species, rather later in flowering out-of-doors, which would make an excellent edging plant, or it could be effectively used in carpet bedding. Of this latter kind a batch of plants in 4-in. pots, under glass in the nursery in question, is just now very effective, many of them bearing, as they do, six or seven spikes of brilliant scarlet blossoms. As town plants Begonias are more suitable than Pelargoniums, and when once established they require less attention. All that is required in this respect is to thoroughly prepare the ground before planting, and each autumn when the foliage has died down to cover the beds with a few inches of Cocoa-nut fibre to exclude frost. If spring-flowering bulbs be planted between the Begonias this covering will also greatly assist them, and on the same beds without any trouble may be had a profusion of flowers from early in spring till the end of October. Several seedling plants of Begonia Emperor, growing near a wall of one of the houses in the Chelsea nursery have withstood the cold of the last two or three winters without injury, and are now fine specimens loaded with blossom.—S.

Two Good Lobelias.—Varieties of this useful decorative plant are now so abundant that unless one has an opportunity of inspecting a collection of them, it is difficult to judge which are really the best. Mr. Cannell's nursery at Swanley contains nearly every kind in cultivation, and amongst them the best blue sort for all purposes appeared to be one named Ebor, a kind compact in habit and a remarkably free bloomer, the flowers being very dark and rich, and, either in pots or beds, very effective. The Bride is another admirable kind, of similar habit of growth; it has large, pure white flowers, and is well adapted either for pot or border culture. These two kinds also look well in baskets, and as they may be had in flower at nearly all seasons of the year, they should be largely grown for use in the conservatory or greenhouse. They are best obtained from cuttings, which strike readily at any time; seedlings seldom come true to character.—C. S.

A Precious Rose.—Niphetos is the Rose which is mainly instrumental in supplying Covent Garden with pretty buds of Tea Roses from New Year's Day to New Year's Day. Mr. Philip Ladds, of Bexley Heath, has now 40,000 plants of it in 9-in. pots.

Colorado Potato Beetle.—We have received from M. Louis Stollwerck, 145, Cannon Street, models of this Beetle in all its six stages of growth. They are in a small box with a glass top, and are prepared by order of the German Government. We may add that they are much more like the Beetle than some of the coloured illustrations of it that we have seen.

Stuartia virginica.—Mr. Woodbridge, gardener to the Duke of Northumberland at Syon House, has sent us some flowering sprays of Stuartia virginica, a beautiful North American shrub, with large, white flowers resembling those of a white Clematis. It is one of the most distinct and beautiful hardy shrubs we have ever seen.

Notes from the Fulham Nurseries.—Tournefortia heliotropioides is well established here on a border in front of one of the houses, and in that position is a good perennial; it is a pretty, Heliotrope-like plant without the odour. Leptospermum lanigerum, a pretty white-flowering shrub is in good bloom against a wall. Magnolia Thompsoniana is in fine bloom, and has been so for the past two months: this is very fragrant and handsome.—J. F.

The Old White Pink.—London florists still appreciate the value of the small fringed-edged flowers of the old White Pink for bouquet-making, but in private establishments its culture has very much decreased of late years. At one time it was largely used for forcing, a purpose for which it is better adapted than any other kind; and when grown under favourable conditions in 5-in. pots, we have often seen plants of it in spring bearing upwards of fifty flowers. Cuttings of it strike readily in spring or summer if placed under a bell glass in a warm house or pit, and soon make flowering plants which, for furnishing cut flowers, or for conservatory or room decoration, are invaluable.—S. C.

Mimulus moschatus Harrisoni.—This new hybrid Musk has found its way to Covent Garden, and plant growers for market regard it with especial favour. It is as easily grown as the common Musk, and its flowers are quite as odoriferous; and being very large and of a rich yellow colour, sometimes blotched with brown, they are very showy and admirably adapted for window decoration. For baskets, too, this is a valuable plant, and if kept well supplied with water it will continue in bloom for many weeks in succession.—S.

A Pretty Contrast.—At the Exotic Nursery, Tooting, in front of a row of Copper Beech, is planted a line of the old double Meadow Sweet (Spiræa Ulmaria fl.-pl.). The latter is smothered with large heads of creamy-white flowers, which, viewed against the dark foliage of the Beech, have a very effective appearance. A little further on is a row of Acer Negundo variegatum, having for a companion a row of sky-blue Delphinium Belladonna, the flowers of which shine out conspicuously against the charming foliage of the Acer. Combinations and contrasts of this kind are worthy of notice, as hardy plants as a rule are planted anywhere, without regard to soil or suitable surroundings, and in nine cases out of ten the effect of good plants is lost from want of a little judgment in the selection of a proper site for them.—A. P.

Freesia odorata.—This is now in flower at the Hale Farm Nurseries, Tottenham, and is well worth the attention of all lovers of half-hardy bulbs. I must call it half-hardy, although I believe it is quite as hardy as Sparaxis pulcherrima, which is found growing with it at the Cape, and the latter has proved hardy in this country; I cannot, however, speak with confidence until I have proved it. The flowers of this species are smaller than those of the variety called Leichtlini, but they are more powerfully scented and are sulphur-coloured, having a deep orange blotch on the three lower petals. Freesia odorata Leichtlini is a pure waxy white, slightly tinged with orange on the lower petal only. In the open ground plants of this are not more than 6 in. high, but that may be owing to late planting, the bulbs having been out of the ground till April. Those potted in January, six in a 6-in. pot, and brought on gradually in a temperate house, made good specimens 1 ft. high, with at least fifty flowers in each pot, filling the house with a delightful fragrance; they were in flower for six weeks, and are now ripening abundance of seed. When better known, these plants will be grown as extensively as the Hyacinth, and I would strongly recommend all who require abundance of cut blooms during May to grow them.—A.

PROPAGATING PINKS, CARNATIONS, AND PICOTEES.

Those who prefer layering these to striking cuttings of them should now set about that work, if it has not been already done. Some layer the shoots in the ground, but a much better plan is to fill 4-in. pots with sandy soil composed of loam, leaf-mould, and peat, sifted through a rather fine-meshed sieve, and plunge them in the ground up to their rims round plants in open borders. Where good young growths exist, by bending them down and splitting the stem from one joint to the other, as seen in fig. 1 (which incision should be well buried in the soil and firmly pegged down), plants may, if the soil be kept moist, be soon obtained, and, being in pots, these when full of roots can be readily removed with the roots intact; whereas, when rooted in the ground the plants often suffer severely from transplantation. In this way most of our nurserymen get their stocks of Carnations, &c., but they do it of course so that the plants in pots can be sent away in better condition than when rooted in the open ground. Some, however, prefer cuttings to layers. Plants can be propagated quite as quickly in that way, but where choice sorts exist people are often afraid to trust to cuttings. They should be taken off early in spring, made as represented by fig. 2, inserted in good sharp sandy soil, and placed in a gentle heat. Cultivators for market put them in 6-in. pots in which a 3-in. one has been inverted to form drainage; they are then plunged in bottom-heat, and in about a fortnight, if well attended to, they are fit for potting off. C. S.

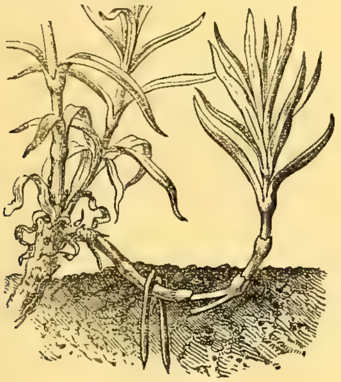


Fig. 1. Layers.

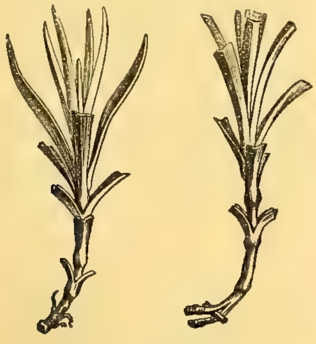


Fig. 2. Cuttings.

Cutting Pots.—"B. S.'s" pots (see p. 41). may do for amateurs; but not for those who require cuttings to be struck in quantity. Allow me, therefore, to set before your readers a system by which, if thoroughly carried out, success is certain. In the first place, I should recommend 5-in. pots to be crocked with broken pots (or any other accessible drainage) about one-third full, then a layer of the siftings of leaf-mould, or anything not too coarse, but of sufficient roughness to prevent the soil from stopping the drainage. The soil should be composed of one-third leaf-mould or good light peat, one-third good turfy loam, and one-third silver sand, to be sifted through a ¼-in. sieve, and well incorporated. The pots should be filled with the prepared soil, pressed as solid with the thumbs as it is possible to make it; then take a portion of dry silver sand and put it round the outside of the pot where the cuttings should be inserted. As to quality and size of cuttings, they should be selected from good strong growths, after the wood is partly ripened, and each cutting should contain three or four eyes, cut at a joint with a good sharp knife, so as to prevent bruising and splitting. Insert them in the prepared pots, care being taken not to dibble the holes deeper than the cuttings are intended to be put in, making all very firm, which is half the battle. Afterwards well water them, and set them in a dry house slightly shaded. Great care should be taken in after watering; they must never be watered until dry at the top, which will vary according to the temperature; and, should the weather permit, a free circulation of air, night and day, must be given. If your readers will adopt the above directions, I feel sure that the damping off spoken of by "B. S." will not occur.—C. L. T.

Roumanian Wild Flowers.—A war correspondent of "The Standard" finds time to say something about plants. The commonest field blossoms which he sees in Roumania are Monk's-hood, Cornflower, Canterbury Bell, Bedstraw, Iris, and that red spike which Ophelia calls "Love in Idleness." These make a sheet of varied colour beside the railway; but most beautiful is a species of Dog Rose, which springs a few inches high among the Grass, and throws up its garlands of large flowers in a cluster. In the far East the same effect of colour and grouping can be seen on a marsh overrun with pink Lotus.

Roses in Nottingham.—In one of the tents at the late exhibition here, Roses formed the chief attraction. Here were Roses in every form—on the tree, in the bouquet, and as single specimens. Mr. Cranston, Hereford, was fairly beaten by Canon Hole, who was able to put forward some magnificent flowers. Mr. Cranston could not well have gone to a better place to have his Roses tried on their merits, for, from a Rosarian's point of view, the show was certainly excellent. The weather being of a character to throw the plants back, and the fact that Notts grows some of the finest Roses, alike tended to bring about this gratifying state of things. Canon Hole swept away by far the largest share of the honours.

Cucumber Disease.—A disease, for which no cause ha sas yet been definitely assigned, and for which no cure has yet been discovered, has committed sad havoc in the Cucumber-houses of some of our largest growers. Whole sets of plants in full bearing, and which would have furnished thousands of Cucumbers, have been obliged to be cleared out and replaced by young ones. Let us hope that the latter may not share the same fate, for, in addition to the loss which such failures incur to the growers, the prices of Cucumbers will also be affected thereby. We have not heard of this disease as yet making its appearance in frame or outdoor Cucumbers, but unless it can be traced to the soil or faulty cultivation, it is to be feared that sooner or later it will prove equally destructive in private gardens. —S.

Provincial Museums, Parks, and Gardens.—In the House of Commons recently, Mr. Chamberlain drew attention to the fact that the public expenditure for the promotion of science and art was exclusively confined to London, Edinburgh, and Dublin. The amount of the estimate this year, he said, for museums, art galleries, and parks in the metropolis amounted to nearly £400,000, and that for Edinburgh and Dublin to nearly £50,000. To those sums the provinces had to contribute twice over. Birmingham contributed about £4000, and had to find about £8000 a year besides for her own local art institutions. It might be said with truth that a national collection should be placed in the metropolis at the expense of the nation. But that argument did not apply to the expenditure on the public parks, and still less to that which the Bethnal Green Museum involved. It will be well for horticulture and arboriculture if the present expenditure be more fairly distributed. If in general collections it is unwise to gather everything into one enormous focus in London, much more so is it in these two branches. In these branches of knowledge the work must be done on the spot to be of any use to the locality, while horticulture generally benefits more from a variety of collections grown in a variety of soils and situations than from a huge collection in one place. For example, the gardens at Dublin are of the greatest importance to Ireland in showing what may be depended on to succeed in that country. Again, for example, it would be greatly to the advantage of the south and west of England if there were a garden there in which similar experience might be gained. So far as trees and gardens are concerned there are indeed good reasons why something very different from the present system is desirable in the true interests of horticulture.

SWEET PEAS.

At a recent meeting of the Royal Horticultural Society (on at which there was a fine horticultural display, but few to witness it), bunches of flowers of all the cultivated Sweet Peas were exhibited by Messrs. Carter & Co. The group was one of peculiar interest, because Sweet Peas are so seldom shown. The brightest of all in colour was the Scarlet Invincible, a truly beautiful Sweet Pea, with its purple crest and clear bright scarlet wings. Purple Invincible is also a fine selection, the crest being maroon and the wings rich purple, while the flowers are large and bold. The Scarlet Sweet Pea has a purple crest and bright rose-coloured wings, and is very pretty, but lacks the size and brilliancy of Scarlet Invincible. Painted Lady is a pretty variety, the crest of which is pale purple, and the wings pink and white. The Invincible Striped gives us the Scarlet Invincible, with the wings flaked with white, on a scarlet ground. The blue-edged Painted Lady is a novel and charming variety, in which the pink and white wings become suffused with blue as the flowers age, imparting to it a very distinct appearance. The Scarlet-striped is simply the Scarlet Sweet Pea with the wings flaked with white, but is quite distinct as a variety. The Purple Sweet Pea is a pleasing, brightly-coloured variety, the crest of which is maroon and the wings bright purple. The Purple-striped has bright purple wings flaked and pencilled with white. Crown Princess of Prussia has a pale salmon-pink crest with dashes of rosy-purple, the wings being pale pink. A new variety named heterosperma is very pretty and distinct; it is a selection from the Invincible Scarlet: it has a delicate rose crest flushed with scarlet, and purple and white wings. Lastly comes an attractive new variety named Violet Queen; it was not exhibited with the foregoing, but I have since seen it growing at St. Osyth. It has a bright lilac crest and blue-violet wings, and can scarcely fail to be a favourite. There yet remains the white, with its small white flowers, very good as a variety and as affording a contrast to the dark-coloured varieties. It will thus be seen that there is quite a wealth of Sweet Peas, and, whether grown in patches of separate varieties or mixed together, they make charming garden plants both for decorative purposes and for affording cut flowers. D.

New and Old Vegetables.—As this is the usual time for sowing Cabbage seed for planting-out in the autumn, I can recommend a new variety, named the Heartwell Early Marrow (Carter & Co.), which with me has been excellent since the middle of May, and it does not run to seed like Enfield Market and some others in the spring. It is of a good size and nearly all heart, and the flavour for a Cabbage is delicious; an older variety named Cattell's Reliance, is likewise an excellent early variety, and one which seldom runs to seed in the spring. The late Mr. Pearson, of Chilwell, sent out an early variety of Cabbage named Conqueror, which was of the type of Reliance as regards coming in early and not running to seed. With the above three varieties of Cabbage a selection is made that will not fail to give satisfaction to every grower. I have lately fruited a new Cucumber sent me for trial by Carter & Co. It is named Model, and it well deserves the name on account of its great length, shape, and excellence for table use.—William Tillery, *Welbeck.*

Ferns and Achimenes in Boxes.—A neighbour of mine has the most luxuriant growth of Ferns I have ever seen. They are grown in large boxes on a south verandah, and therefore away from our hot South African sun, and scorching north winds, and they are given plenty of stable or cowshed manure, which is dug in between the Ferns every few months. These Ferns keep their beauty all the year round, but in summer they appear as if they were thickly studded with the flowers of a large blue Achimenes. Naturally one would suppose that these were in pots sunk amongst the Ferns, but no, they are in the same soil all the year round, partaking of all the water and manure which the Ferns get, and take their chance of being dug out with the trowel during the season of rest. Of course in digging in manure at that time the tubers sometimes get turned out, and my neighbour can spare some of them for friends, but enough remain amongst the Fern roots to produce the most lovely effect in summer. This seems to agree with the new light recently given on bulbs needing moisture during their resting season.—W. C. E., *Port Elizabeth.*

Bougainvillea spectabilis not Flowering.—Can you give me any information as to how to treat this plant so as to make it flower?—J. S. [Failure may arise from various causes, such for instance as the plant being too vigorous through having unlimited root-room, or from being in a house too much shaded, in either of which cases it is impossible to get the wood ripened. Bougainvilleas must have full exposure to all the sun and light it is possible to give them, and at the same time exuberant growth should be checked by only allowing a limited quantity of soil on which to feed. If "J. S.'s" specimen be planted out and trained under the roof, the best thing that can be done with it now is to cut out all the gross shoots, and give no more water from now till next spring than is just sufficient to keep it from shedding its leaves. By doing this and restricting the roots so as to secure thorough maturation of each season's growth, every shoot will become clothed with flowers almost its entire length. On trellises, Bougainvilleas never get sufficient sun and light, but trained up close to the glass they are easily managed and always bloom freely.—S. J.]

Vegetation and Man.—"The earth at its surface, which human beings look upon and deal with, ministers to them through a veil of strange intermediate being, which breathes, but has no voice; moves, but cannot change its place; passes through life without consciousness, to death without bitterness; wears the beauty of youth without its passion, and declines to the weakness of age without its regrets. And in this mystery of intermediate being entirely subordinate to us, with which we can deal as we choose, having just the greater power as we have the less responsibility for our treatment of the unsuffering creatures, most of the pleasures which we need from the external world are gathered, and most of the lessons we need are written. All kinds of precious grace and teaching being united in this link between the earth and man. . . . . Fragility or force, softness and strength in all degrees and aspects; unerring uprightness as of temple pillars, or divided wanderings of feeble tendrils on the ground, mighty resistance of rigid arm and limb to the storms of ages, or wavings to and fro with faintest pulse of summer streamlet. Roots cleaving the strength of rock, or binding the transience of the sand; crests basking in sunshine of the desert, or hiding by dripping spring or lightless cave; foliage far tossing in entangled fields beneath every wave of ocean—clothing with variegated, everlasting films the peaks of the trackless mountains, or ministering by cottage doors to every gentlest passion and simplest joy of humanity."—"Modern Painters," vol. v.

QUESTIONS AND ANSWERS.

St. Peter's Sperm.—About a year ago I observed a shrub growing in Jersey and Guernsey which at first sight I mistook for the common evergreen Euonymus. It had a flower the scent of which was very like that of Orange flowers. A gardener told me it was called "St. Peter's Sperm." I should be much obliged if you would kindly inform me of the name and history of it.—J. Y. [The shrub meant is probably Pittosporum Tobira, a valuable evergreen for sea-shore and mild districts.]

White Scale on Pine-apples.—It may interest your correspondent, "J.S.W." to know that the advice (see vol. ix., p. 204) which I got through The Garden, how to destroy white scale on Pines, turned out a complete success. I applied it at the end of February, under circumstances not at all favourable, my plants, having been imported in the autumn, not being well established; however, they stood it very well, except a few black Jamaicas.—Chr. L. Jorgensen, *Hardenberg, Saxkjobing, Denmark.*

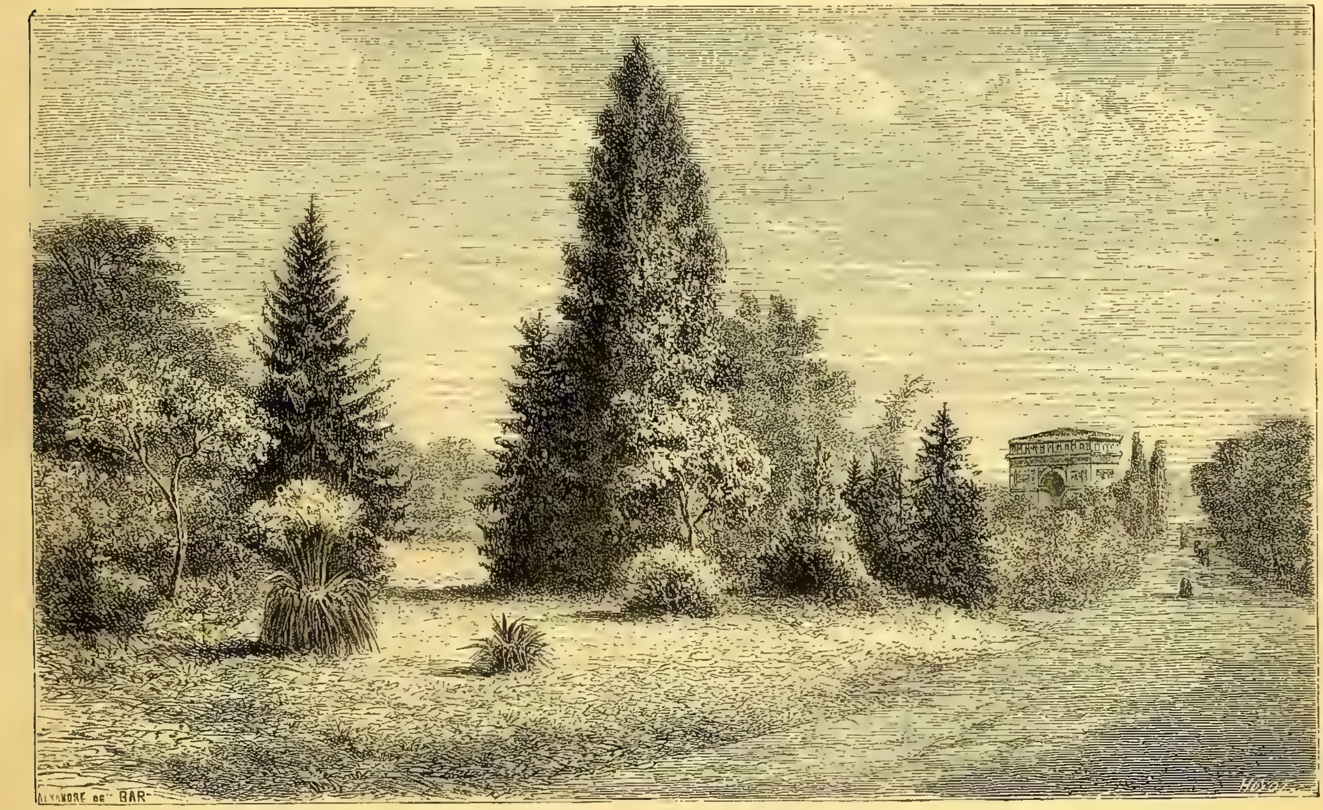
Salus and the Potato Disease.—I notice in a contemporary that the disease has appeared on the Potatoes at Chiswick. Can you inform me whether it has attacked that portion of the crop to which the "Salus" was applied at planting time, under the superintendence of Mr. Worthington Smith, and if the plants are as badly affected as the others? Your contemporary furnishes the most meagre information on this point, and as it is now about time to apply the second dressing of "Salus," the public would now doubt be glad to hear the result of the experiment at Chiswick so far.—A Potato Grower. [The Potatoes at Chiswick are affected in a similar manner to those of two years ago, on which Mr. Worthington Smith found the rest-spores of the Peronospora. Whether the evil is, as was then stated, an earlier stage of the disease or not, we cannot tell, but it is very different from the well-known form, of which there are no traces apparent yet. Those Potatoes which have been dressed with Salus are affected quite as much as others not so treated. In the disease which is now attacking the plants at Chiswick, a plant here and there becomes affected, the leaves spot and wither up, and gradually dwindle away entirely, without any infection or spreading. Some are of opinion that this new form of disease is due to some extraneous cause.]

Lentils.—(1) Are there different qualities of Lentils used in this country? If so, would Lentils about 21s. per bushel, containing a large proportion of dirt in small lumps, be considered an inferior quality? (2) What are inferior qualities used for?—A. X. A. [(1) As is the case with other things there are good and bad samples of Lentils, and the price (21s. per bushel) is the value of a good sample. (2) Inferior samples are used for pig feeding, and they are also ground up and used in certain condiments for poultry feeding.—C. H. S.]

Garden Seats and Wire Netting.—Mr. Thomas, Edgware Road, exhibited at a recent meeting at South Kensington some examples of garden seats and wire netting, which were reported, by mistake, to have been shown by Mr. Hatchman.

CITY AVENUE GARDENS.

The beauty of which avenue gardening is capable, even in cities, is fairly shown in the accompanying illustration. The effect is from various points of view very free and graceful, there being considerable variety in the vegetation and ample room in the well-formed footways and roads. There is also considerable breadth—a notable fact in days when large gardens have none; indeed, the most pleasing feature to anyone caring about garden design is the ample lawns that form a carpet for the groups and masses of shrubs. Most large cities have opportunities for the formation of avenue gardens which have hitherto seldom been taken advantage of; and in the future improvement of the Metropolis, the mode of proceeding most satisfactory would be the cutting of roomy avenues through many crowded parts of the town, now with closely packed and mean houses of little value and incapable of accommodating many persons. Indeed, such avenues or open roads, or whatever they may be called, are a greater need in very large cities than parks, because they give means of ready circulation as well as free air, and also greatly improve the value of property in each part of the town which they traverse.



A City Avenue Garden.

New White Martagon Lily.—None of the new Lilies equal in beauty the old White, but there is a really good form of the White Martagon in the hands of Mr. Parker: it is likely to be a valuable garden plant. He also has the double Martagon—more curious than beautiful. Good forms of this Lily are desirable from its free growth in our climate even in woods.

The Yellow Variegated Cock's-foot.—This is a new form of a well-known native Grass, which is likely to be as popular or more so than the old well-known variegated form of this plant. The variegation is a soft yellow, regular, and the growth free. The plant is one of the many precious varieties of our native plants discovered by our correspondent Mr. Elliot, who has done more than any other man in discovering and securing beautiful variegated and other interesting forms of British plants. The present form is being distributed by Messrs. E. G. Henderson, of Pine Apple Place.

TREES AND SHRUBS.

SALIX LAURIFOLIA.

In several of our nurserymen's catalogues is mentioned a tree which they call Salix laurifolia. The specific name is not authorised, and I have not found it even as a synonym in any works to which I have had access. S. pentandra is the nearest, from which, in several respects, it is yet notably different. Be this as it may, the tree, though but a Willow, is such a gem among Willows, that one admires it without charging upon it the blemishes of its family. I have been educated to a full appreciation of this medium-sized tree by slow degrees. No other in our grounds has excited from visitors the same amount of praise; in truth it at first annoyed me, that friends would pass by costly novelties, with polite expressions of approval, to pour out upon this words of real admiration; and so at length it happened that I saw this tree not as a Willow at all, with a malarial atmosphere of swamps about it, but as one of remarkable beauty, none the worse for its lowly connections.

That it should be one of the first to unfold its leaves in the spring, and one of the last to lose them in the autumn, is a characteristic of Willows generally, though possessed by this species in an unusual degree; while that it should thrive in extremely dry situations. as well as in those of medium and excessive moisture is, as far as I am aware, peculiar to this species. We have one specimen growing beside a lake, upon a bank less than 1 ft. above its level, so that its roots are perpetually in the water. Another specimen is placed in a situation that is neither dry nor moist; another grows upon high, dry ground, within 3 ft. of a wing of our dwelling, and still another in a situation so sandy and dry, that we have been obliged, after repeated failures with other plants, to use such salamanders as Pines, Locusts, Privets, Matrimony Vines (Lycium barbarum), and the like, to secure something of an ornamental appearance to this half arid belt.

Between the above specimens—growing in soils and situations so widely different—there is little difference in growth or thrift, and this little is in favour of the specimen growing near the dwelling.

The Weeping Willow (S. babylonica) is in England a far handsomer tree than it is with us—at least in the middle and northern States. It is not quite hardy in this climate (New York)—not perhaps owing to the severity and extremes of weather alone, but because it is often weakened by various insects or their larvæ, that infest and sometimes girdle the stem. Thus, if not killed outright, it is often so injured by the frosts of winter as to present anything but a pleasing appearance the following summer. Hence we seldom see it in its full size and beauty; besides, it is not, like the S. laurifolia, at home in sandy, dry situations. In view of this, as also of the fact that I have never known the stems of S. laurifolia to be injured by insects, I attempted last summer to bud the one upon the other. The bud of S. laurifolia upon the S. babylonica lived, and is now growing vigorously; the bud of the S. babylonica upon the S. laurifolia perished. Doubtless, however, the rule would work both ways, and thus the insect and drought-resisting S. laurifolia could be made the stock of the Weeping Willow, which cannot so well endure drought, and is so often at the mercy of insect depredations.

As to the identity of S. laurifolia and S. pentandra, the leaves of the former (as you may see by those enclosed) are longer, averaging at this time (June 27) 4 in.; they are also more finely crenate, more acuminate, and provided with reniform stipules. The tree is of more rapid growth, and attains to a somewhat greater height than S. pentandra, which, according to Loudon, is from 18 ft. to 20 ft. S. Meyeriana, which Linnæus calls S. pentandra, more nearly corresponds with the form and size of the leaf, but the branches cannot be called "brownish," and the stipules do not "soon fall off." One of our oldest nurserymen, Mr. S. B. Parsons, imported it from Angers in 1860, under the name of S. laurifolia, which, had it been either S. pentandra or S. Meyeriana, would have been quite unnecessary.

In the above respects there may be a difference between the male and female trees. I speak only of the female, never having seen any other; but of it I may say with enthusiasm that, on account of its incomparably glossy leaves that reflect the slightest light, its tall, smooth branches that sway in the wind as if they would surely be torn into shreds, and, withal, its elasticity, freshness, and shapeliness, it is worthy to fill not only those out-of-the-way places which are deemed unworthy of the finer plants, but of an imposing position upon the lawn, where, by the free use of the pruning-knife, it may be made to assume a round, spreading head, or, if left to itself, a fastigiate form, more glossy than, and as darkly green as, Magnolia grandiflora, and as compact and symmetrical as need be desired.

I should be glad if you could determine the name of this Willow. E. S. Carman.

River Edge, Bergen Co., New Jersey.

[The Willow leaf which Mr. Carman has sent is, according to Mr. Gordon, that of Salix lucida of Michaux, and Salix Forbesi of Sweet's "Hortus Britannicus" for 1830.]

WIER'S CUT-LEAVED MAPLE.

Several years ago, in August, I was walking between two rows of Silver-leaved Maple seedlings (Acer dasycarpum) or the common Soft Maple of our river bottoms. My attention was attracted by one with very peculiar foliage. A careful observation of it convinced me that it was not only very peculiar but very beautiful. Its leaves were finely divided, almost grass-like, clear, bright green above, with the midribs a bright crimson, silvery-white beneath. The twigs were slender, of nearly the same size throughout, and gracefully pendulous. The tree was then of three years' growth from seed, and had been once transplanted, one little tree among many thousands. It was carefully marked, and a number of its finest leaves taken home and pressed; these were shown to neighbours, but most of them considered a Maple tree a Maple tree and nothing more. Samples of the leaves, and a description of the tree were sent to Messrs. Ellwanger & Barry, Rochester. They were at once interested in it, and wrote me that if I would send them a plant of it they would hold it subject to my order, and if it came up to my commendation they would pay me a reasonable consideration for the privilege of being the first to introduce it. After growing it one season, they offered me a very satisfactory price for this privilege. I sent the stock to them, and it has been one of the attractions in the way of new plants in their catalogues for several years, and may now be seen in many of the finest plantations in the country. The autumn after I found the original tree it was taken up and replanted in a place of safety. At that time it had a little scion growing from its collar, the next season this took root, and it and the scion were sent to Ellwanger & Barry. In the spring of 1870 it became necessary to transplant the original tree again. This was an exceedingly dry season, and I nearly lost it. Wier's Cut-leaved Silver Maple, says Mr. G. Ellwanger, though of recent introduction and therefore but little known, is one of the most beautiful and remarkable trees with cut or dissected foliage yet introduced. Its growth is rapid, shoots slender and drooping, giving it a habit almost as graceful as the Cut-leaved Birch. The foliage is abundant, silvery underneath, and on the young wood especially, deeply and delicately cut. The leaf-stalks are long and tinted with red on the upper surface. We believe it will rank at once among the most interesting and attractive of lawn trees, and may be easily adapted to small places by an occasional cutting back, which it will bear to any degree necessary, as well as a Willow. It will doubtless eventually become vastly more popular than the Birch, owing to the ease with which it may be propagated. It grafts or buds readily on seedlings of the Soft Maple. My favourite way of working it is to bud or graft it at standard height on the strongest-growing seedlings: this plan adds greatly to its pendulous habit.—D. B. Wier, *Lacon, Marshall Co., Ill.*, in "Prairie Farmer."

New Magnolias.—We have received flowers of Magnolia Lenné, M. Thurberi, and M. Halleana from Messrs. R. B. Parsons & Son. These are varieties—the first of purpurea and the other two of the Chinese. The Lenné differs from the M. purpurea in having very broad petals. Halleana has numerous narrow, white petals—is, in fact, semi-double, and Thurberi is a fine-petaled variety, more cream-coloured. In reference to these we have the following note:—"I sent you by mail a box containing flowers of Magnolia Thurberi, as we named it long ago. Since sending it, Mr. T. Hogg tells us he is under the impression that he bloomed it some time ago under the name of M. stellata. We have grown it about twelve years, and these are the first flowers we have had. It is good as a variety, but not equal to Magnolia Halleana, which, with its dwarf habit, small flowers, and fragrance, is a great acquisition. This M. Halleana we have bloomed a number of years. These Magnolias, with Retinosporas and other things, we received from Dr. Hall, who was then in business in Japan, and very fond of plants. I hope you will be able to form some idea of the character of the flower."—"Gardeners' Monthly."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Hardiness of Fremontia californica.—This precious shrub, hitherto supposed to require a wall, has this year bloomed freely in the open ground in Mr. Parker's nursery at Tooting. Therefore we may assume that at least on warm or well-drained soils we have in this a hardy shrub of the highest promise for our lawns and choice groups of shrubs and low trees.

Siamese Twin Trees.—Within a mile of where I live there are two trees grown together—an Oak and a Beech. The Beech measures 110 in. round, the Oak 78 in. They are about 50 ft. high, and joined by one limb, which shows no signs as to whether it grew from the Beech or the Oak; but as the Oak faces the field and light, and the Beech is directly behind it, I should think it more likely to have originally sprung from the Beech.—H. M. R.

Large Silver Firs (see p. 48).—There are some very fine specimens of the Silver Fir in the grounds at Herriard Park and Hackwood Park, both in Hampshire. Several of them measure 12 ft. and upwards in circumference at 3 ft. from the ground, and are fairly healthy. I do not know their exact heights, but judging by the way in which they overtop other large trees growing round them, I should say that they are quite 130 ft. in height. At the former place these stand on high ground, and are a landmark for miles around. The soil is a stiff calcareous loam, resting on chalk. A Spruce growing near the Silver Firs in Hackwood Park measured nearly 17 ft. in circumference at 4 ft. from the ground five years ago.—H. J. C., *Grimston.*

THE GARDEN OF BRITISH WILD FLOWERS.

"A mass of weeds and Briers run wild; the sooner they are cleared away the better!" Such might be the opinion of too many a gardener of the old school on the wild garden. It is hoped, however, that some change is gradually coming over our national taste, and a love for the hardy wildings of Nature—the old-fashioned plants of our forefathers—reviving. We want to see them restored not to trim avenue and made border, but growing in a truly natural garden as if at home in their native haunts. There are many of our British wild flowers which are eminently entitled to garden honours by their beauties of form as well as of colour, and far more suited for true landscape gardening than the stiff beds in which fashion places the favoured foreigners. Without wishing to detract in the least from the merits of the said foreigners, many of which are most useful in the wild garden, it is the object of the present series of papers to pass under review our British flora, calling attention to those features of the various plants which make them desirable in the transcript of Nature that we wish to effect by their groupings.

Clematis Vitalba.—First in the order of the botanist, and among the first in loveliness comes Traveller's Joy, Old Man's Beard, Virgin's Bower of dear old Gerarde, Honesty of the Gloucestershire hills, and Clematis Vitalba (the "tendril-like White Vine"), as the scientific term it. Strange as it may seem to the uninitiated, this plant is ranked with Anemones, Larkspurs, Columbines, and Monk's-hood, in the natural Order Ranunculaceæ—the Buttercup or Crow-foot tribe—but its woody stem and leaves in opposite pairs are exceptional characters in the group. Its clambering stems and bright green leaves in old quarries or hedge-rows on our chalk downs, the limestone of the Cotswolds, or more sparingly in other situations, are familiar objects in spring; but only the more observant will have remarked its mode of climbing, how it twines the stalks of its leaves around the other plants in its vicinage, thus showing a transition towards those climbers in which the leaves have become modified into tendrils. When we examine its bright, clustered flowers, which are often nearly 1 in. in diameter, we find a resemblance to the Anemone and Marsh Marigold, in that there is no green calyx, the four white sepals alike covering the bud and appearing as petals. In several genera in this Order the corolla is thus absent. The numerous pale creamy stamens add another charm to the beauty of the individual blossoms, while after flowering the plant remains attractive through the summer from the shortly-tufted, woolly tails or awns of the small dry fruitlets or achenes, which, when the leaves are shed, remain considerably lengthened, and give the plant its name of Old Man's Beard. As we have mentioned, the Clematis loves a light, dry, calcareous soil, but it by no means refuses to grow elsewhere, and will flourish in a tolerably stiff garden loam. We have seen its stem 5 in. or 6 in. in diameter, but no doubt, if desired, it might, like its well-known foreign allies, be trained over the wall or porch of a house. It is not a native of Scotland or Ireland, and occurs on the Continent from Holland southwards, in Western Asia, and Northern Africa. Though its blossoms are scented and of good size, it is rather *en masse* that this plant claims our attention, and we would suggest that where it cannot be placed on a steep, rocky bank, or quarry, it may form with the double Pink Bramble, the White Bryony, and the Sweet Brier, or some other wild Rose, a graceful clump of mingling sprays of leaf, blossom, and fruit, such as we have seen on many a Surrey common, clustering round an old Thorn, or under the branches of a fine Elder. Our woodlands afford few more brilliant autumn combinations than the red hips of the Rose, the berries of the Bryony, the large clusters of the black-purple of the Elder, the luscious Blackberries, and the white crests of Clematis.

The Anemone.—Three very distinct species of this genus are ranked among British plants, viz., the Pasque-flower (A. Pulsatilla), the Wood Anemone (A. nemorosa), and the Apennine Anemone (A. apennina); of these the last can hardly be considered wild. The genus is characterised by the absence of petals, the function of which is performed by the overlapping or imbricate sepals, by the lobed or divided leaves springing directly from the ground, and by the three leaf-like bracts, which form a whorl or involucre on the flower-stalk. Our idea of a trimly-shaven lawn may have had its origin in those natural lawns formed of Moss in woods or of stunted Grass on our limestone downs, and it may be well to have some part of our wild garden similarly free from domineeringly luxuriant Grass, and better still for the variety of gay-flowering, prostrate plants with which we can cover it, if such a space be on calcareous soil. It is on such lawns, on the chalk and limestone from Yorkshire to Gloucestershire, Berkshire, and Suffolk, that the glorious purple blossoms of the Pasque-flower display their Easter splendour. It was from the Paschal-tide of its flowering that Gerarde gave it its popular name. Last year, growing side by side, the Wood and Apennine Anemones blossomed on the 5th, and the Pasque-flower on the 8th of April. This plant never attains any considerable height, and its white, silky, much-cut leaves, do not fully develop themselves until after the flowering of the plant; the purple, drooping bud appears on a short stalk, but soon turns upwards and opens its bright violet bell, nearly 2 in. deep, exhibiting the mass of golden anthers; the sepals are six in number, and silky on the outside. A single plant will produce over a dozen flowers. After flowering, the flower-stalk, crowded with a bunch of silky awns, lengthens considerably; like the Columbine, the flower sometimes varies to a maroon-red, and Sir William Guise informed me that in Auvergne he found this colour only. Besides the above-mentioned counties, this plant is recorded from Hertfordshire, Cambridge, Huntingdon, Bedford, Northampton, and Lincoln, the nearest localities to the metropolis being Ashley, in Hertford, and Streatley, in Berkshire. The Wood Anemone (A. nemorosa) is so universal in its distribution, and so well known as to need no description. Its white, pink or rosy flowers are among the greatest ornaments of our copses and wood glens from March to May. The flowers are rendered strikingly conspicuous by the dark green of their smooth leaves. The plant derives much of its beauty from the graceful drooping of the flowers, and the large masses in which it grows, especially in clearings in the woods. Besides the above-mentioned colours the recently introduced blue form (A. nemorosa Robinsoniana) and that with double flowers are especially noticeable as suited for planting under the trees of

The Pasque-flower (Anemone Pulsatilla).

Wood Anemone (A. nemorosa).

Apennine Anemone (A. apennina).

the wild garden. The Wood Anemone extends into Arctic Europe and North America, and reaches altitudes of nearly 3000 ft.

Similar situations in the garden are suited to the Apennine and Yellow Anemones (A. apennina and A. ranunculoides), neither of which are truly natives of the British Isles. The violet flowers of the former have more numerous and narrower sepals than the Wood Anemone and are more spreading, whilst the latter is a most desirable plant, owing to its bright yellow blossoms, which succeed those of the Winter Aconite (Eranthis hyemalis). The Apennine species is naturalized in many plantations, especially at Cullen in Banffshire and at Wimbledon Park, Surrey. The yellow species occurs in parks in several counties, among others at Abbot's Langley, Hertfordshire, Worksop in Nottinghamshire, and in Kent.

Meadow-Rues.—Another group in the Crowfoot tribe is that of the Meadow-rues (Thalictrum), so called on account of the small wedge-shaped leaflets into which the compound leaves (which they possess in common with so many members of the tribe) are divided, which resemble very closely those of the true Rue (Ruta) and of the well-known Wall-rue Fern (Asplenium Ruta-muraria). Like the Clematis, the Meadow-rues have no petals, but the sepals are small and overlap one another in the bud, an important character for diagnosis, which is expressed by the term "imbricate." The individual flowers of the Meadow-rues are neither brightly-coloured nor beautiful; but they are grouped into extremely graceful inflorescences, which feature, in combination with their Fern-like foliage, renders them desirable for the garden. They are variously arranged by botanists, but we would especially direct attention to the Alpine Meadow-rue (Thalictrum alpinum), and the Lesser Meadow-rue (T. minus), as the other forms are somewhat coarse in their growth. The Alpine Meadow-rue has very minute leaflets and an unbranched inflorescence of few, drooping, purplish flowers. It inhabits Alpine and sub-Alpine bogs, ranging from the Himalayas, across northern Asia and Europe to America, and extending into Arctic latitudes. It grows, as might be expected, also at a considerable altitude, reaching 4000 feet above the sea. The plant ranges in size only from 4 in. to 10 in., but has a close habit of growth, so as sometimes to resemble very remarkably one of the Adiantums; thus it is obviously well worthy of cultivation. I recently saw some flourishing examples of the group at Messrs. Henderson's, Wellington Nursery, along with the Lesser Meadow-rue, a plant with similarly graceful foliage and a loosely-branched flower-spike of yellowish blossoms, which ranges in height from 6 in. to 18 in., and is most desirable for the rock garden, since, though having a geographical range similar to that of the Alpine species, it frequents dry places in the wild state, and does not grow at altitudes over 1800 ft. G. S. Boulger.

Yellow Meadow Rue (Thalictrum flavum).

OLD ROSES.

"Without at all denying the great beauty of many of the Hybrid Roses," writes Mr. Ellacombe, "I am sure that growers of hardy flowering shrubs do not know what they lose in so entirely ignoring old Roses as they do." We entirely agree with our correspondent, and think that one function of the Rose Society should be to extend the knowledge and promote the cultivation of these lovely flowers. As a means to this end we asked Mr. Ellacombe to be kind enough to select from the multitude grown by him those species most remarkable or interesting as garden plants. In reply he has sent us the following list, but in view of the confusion of the nomenclature, he simply gives the names as he finds them, without accepting responsibility for their correctness:

Cabbage Rose.—Unsurpassed for scent, the "Provençal Rose" of Hamlet.

Moss Rose.

Damask.

Scotch.—Forms most beautiful bushes, which are loaded with flowers in their season.

Banksian, white and yellow.—Is the single form in cultivation?

Bracteata or Macartney.—A grand single Rose with bright foliage. The double form is very inferior, as it wants the golden centre.

Villosa.—The old Apple Rose. Very effective as a lawn shrub both in flower and fruit.

Green Rose, R. verte.—More curious than pretty.

Microphylla.—A charming Rose when well grown, and very distinct; very double, beautiful foliage, unlike any other plant, and with a curious prickly calyx.

Alba.—One of the oldest English garden Roses, and most excellent, but seldom seen out of cottage gardens; pure white, double, but not very fully; probably a variety of R. avensis, and almost beating the white Rose of York.

Rubrifolia.—Curious for the colour of the stems and leaves, and handsome both in flower and fruit; single.

Moschata.—The old Musk; a long rambling Rose, but very sweet, with clusters of pure white flowers

York and Lancaster.—Very distinct.

Alpina.—The Rose without a thorn.

Anemonæflora.—Fortune's name for a very distinct form of R. indica, a small double cluster Rose.

Multiflora.—The Bramble-flowered Rose. A pretty Rose, very like the double Bramble.

De Meaux.—An excellent old Rose.

R. rubiginosa.—Double and single Sweet Brier.

Austrian Brier.—Distinguished by its different colour on the outside and inside of the petals.

Fairy Rose.—Very dwarf, so that edgings may well be made of it. The new white one, Little Pet, is especially pretty.

Monthly China.—Too much neglected. I know of no flowering shrub that can show such a succession of flowers as this. Does any one?

R. cinnamomea.—A rambling bush, but the flowers very bright, and the long fruit very handsome.

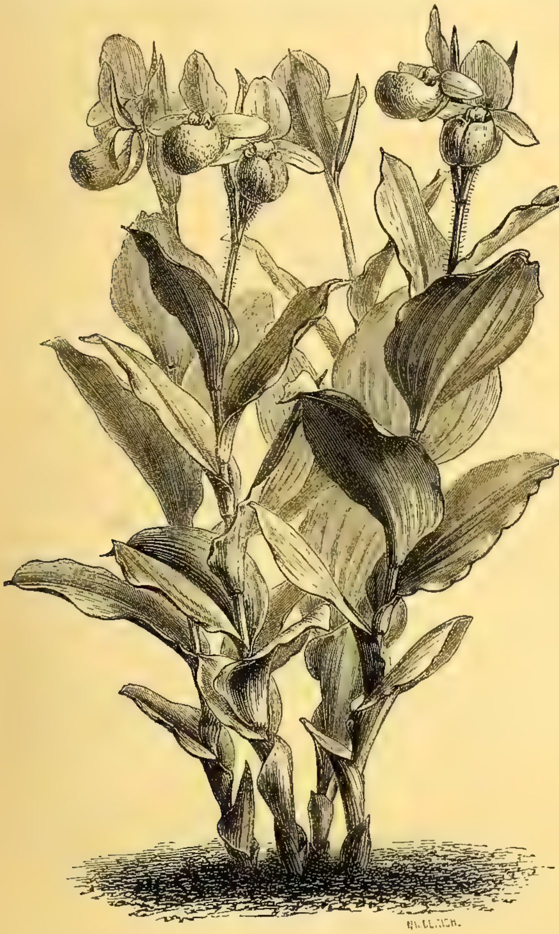
Has any one got R. Hardi, simplicifolia, sulphurea single, and myriacantha?—"Gardeners' Chronicle."

The Wilson Raft for Water Plants.—Having been told that Messrs. Rollisson had done something in this way, I called on the 19th inst. on Mr. Rollisson, who seemed rather amused at what they had done having been made into a rival of the Wilson Raft, and took me down to see it. I found near the side of a pond where there seemed much mud and little water, a fine clump of Myosotis, which Mr. Rollisson told me had been supported by a piece of wood. From the present stationary appearance, I should suppose that the roots have long since reached through the few inches of water to the mud at the bottom of the pond. My journey was, however, not wasted, as Mr. Rollisson, on hearing my ideas explained to him, warmly adopted them, and as with his series of ponds he has every facility for the purpose, and has now all the particulars I can furnish, I feel sure that we shall have the uses of the raft most fully and successfully developed. I must add that after seeing so much pond space, with some Water Lilies already growing, and with one part which never freezes, I felt surprised that such a simple contrivance as the Wilson Raft had not been thought of.—George F. Wilson, *Heatherbank, Weybridge.*

Lilium superbum in Ohio.—In moist localities through the woods here just now, this fine Lily is in perfection—its flower-spikes rising up to a height of 6 ft. or more, producing twelve and fifteen flowers on a single spike. The buds, before they open, are very pretty, being bright orange-scarlet, the inside spotted with dark purple. Lifted in autumn, and planted in a well-enriched flower-bed, they do remarkably well, and form a very attractive addition to the flower garden. A bed in the flower garden here just now, planted with it, is the prettiest one we have.—M. Milton, *Cleveland, Ohio*, in "Country Gentleman."

THE MOCCASIN FLOWER IN ENGLAND.

Among the many evidences of the growth in favour of the finer classes of hardy plants, are the numerous specimens of this that have been seen in flower round London during the past two seasons. The plant thrives freely in moist peat or bog earth, or rich loam with plenty of leaf-soil. It loves a somewhat shady situation, in the south at least. Messrs. Jas. Dickson, of Chester, have lately sent us some forms of this with the lip very dark and rich in colour—a variation which may sometimes be noticed where large numbers of the flower are growing.



Cypripedium spectabile.

Japanese Note Paper.—Messrs. Goodall have brought out specimens of Japanese note paper and envelopes which possess novelty and tasteful design. The branching and blossoming of the spring-flowering trees, truthfully represented in Japanese paintings and ornaments, are here reproduced with very good effect in green, blue, pink, silver, and golden hues. The Bamboo stem and foliage is also used with a graceful effect in silvery printing; but the same design in black is far from pretty, and this may be said of all the "mourning" patterns. The Japanese are said to be a happy and joyous people, whose art is in many ways worthy of our best attention, and we should never suspect them of printing hideous black patches on their paper—no matter how sad the occasion. The use of black-bordered paper is indeed dying out in this country in many families. The other papers, however, are most tastefully designed and printed, and worthy of the repute of the Messrs. Goodall for tasteful colour-printing.

Trees in Shropshire.—The "Annual Register" for 1760 says:—"We hear from Shropshire that an Oak was lately felled near Ludlow, in that county, the contents of which were as follow, viz.:—36 tons of timber, 42 cords of wood, 200 park pales, and 4½ cords of brackets. A bough broke off before the tree was felled which weighed 7½ tons. Two men were employed a month in stacking it. The tree was valued at £138."

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 55).

Rosemary.

(1) *Perdita.* Reverend sir,
For you there's Rosemary and Rue; these keep
Seeming and savour all the winter long.
Winter's Tale, act iv., sc. 3.

(2) *Bawd.* Marry come up, my dish of chastity, with Rosemary and Bays.
Pericles, act iv, sc. 6.

(3) *Edgar.* Bedlam beggars, who, with roaring voices,
Strike in their numbed and mortified bare arms
Pins, wooden pricks, nails, sprigs of Rosemary.
Lear, act ii., sc. 3.

(4) *Ophelia.* There's Rosemary, that's for remembrance; pray you, love, remember.
Hamlet, act iv., sc. 5.

(5) *Nurse.* Doth not Rosemary and Romeo begin both with a letter?
Romeo. Ay, nurse; what of that? both with an R.
Nurse. Ah, mocker! that's the dog's name; R is for the dog. No; I know it begins with some other letter:—and she hath the prettiest sententious of it, of you and Rosemary, that it would do you good to hear it.
Romeo and Juliet, act ii., sc. 4.

(6) *Friar.* Dry up your tears, and stick your Rosemary
On this fair corse.
Ibid., act iv., sc. 5.

The Rosemary is not a native of Britain, but of the sea-coast of the south of Europe, where it is very abundant. It was very early introduced into England, and is mentioned in an Anglo-Saxon Herbarium under its Latin name of Ros marinus, and is there translated by bothen, *i.e.*, Thyme; also in an Anglo-Saxon vocabulary of the eleventh century, where it is translated Feld-madder and Sun-dew. In these places our present plant may or not be meant, but there is no doubt that it is the one referred to in an ancient English poem on the virtues of the Rosemary, published in Wright and Halliwell's "Reliquiæ Antiquæ."

We can now scarcely understand the high favour in which Rosemary was formerly held; we are accustomed to see it neglected, only tolerated in some corner of the kitchen garden, and not often tolerated there. But it was very different in Shakespeare's time, when it was in high favour for its evergreen leaves and fine aromatic scent, remaining a long time after picking, so long, indeed, that both leaves and scent were almost considered everlasting. This was its great charm, and so Spenser spoke of it as "the cheerful Rosemarie," and good Sir Thomas More had a great affection for it. "As for Rosemarie," he said, "I lett it run alle over my garden walls, not onlie because my bees love it, but because tis the herb sacred to remembrance, and therefore to friendship; whence a sprig of it hath a dumb language that maketh it the chosen emblem at our funeral wakes and in our buriall grounds." And Parkinson gives a similar account of its popularity as a garden plant:—"Being in every woman's garden, it were sufficient but to name it as an ornament among other sweet herbs and flowers in our gardens. In this our land, where it hath been planted in noblemen's and great men's gardens against brick wals, and there continued long, it riseth up in time unto a very great height, with a great and woody stem of that compasse that, being cloven out into thin boards, it hath served to make lutes or such like instruments, and here with us carpenters' rules and to divers other purposes." It was the favourite evergreen wherever the occasion required an emblem of constancy and perpetual remembrance, such especially as weddings and funerals, at both of which it was largely used; and so says Herrick of "The Rosemarie Branch"—

Grow for two ends, it matters not at all,
Be't for my bridall or my buriall.

Its use at funerals was very widespread, for Laurembergius records a pretty custom in use in his day, 1631, at Frankfort:—"Is mos apud nos retinetur, dum cupresso humile, vel rore marino, non solum coronamus funera jamjam ducenda, sed et iis appendimus ex iisdem herbis litteras collectas, significatrices nominis ejus quæ defuncta est. Nam in puellarum funeribus hæc fere fieri solent" ("Horticulturæ," cap. vj.)

Its use at weddings is pleasantly told in the old ballad of "The Bride's Good-morrow"—

The house is drest and garnisht for your sake
  With flowers gallant and green ;
A solemn feast your comely cooks do ready make,
  Where all your friends will be seen :
Young men and maids do ready stand
With sweet Rosemary in their hand—
  A perfect token of your virgin's life.
To wait upon you they intend
Unto the church to make an end :
  And God make thee a joyfull wedded wife.
Roxburgh Ballads, vol. 1.

It probably is one of the most lasting of evergreens after being gathered, though we can scarcely credit the statement recorded by Phillips that "it is the custom in France to put a branch of Rosemary in the hands of the dead when in the coffin, and we are told by Valmont Bomare, in his 'Histoire Naturelle,' that when the coffins have been opened after several years, the plant has been found to have vegetated so much that the leaves have covered the corpse." These were the general and popular uses of the Rosemary, but it was of high repute as a medicine, and still holds a place, though not so high as formerly, in the "Pharmacopœia." "Rosemary," says Parkinson, "is almost of as great use as Bayes, both for inward and outward remedies, and as well for civill as physicall purposes—inwardly for the head and heart, outwardly for the sinews and joynts; for civile uses, as all do know, at weddings funerals, &c., to bestow among friends; and the physicall are so many that you might as well be tyred in the reading as I in the writing, if I should set down all that might be said of it."

With this high character we may well leave this good, old-fashioned plant, merely noting that the name is popularly but erroneously supposed to mean the Rose of Mary. It has no connection with either Rose or Mary, but is the Ros marinus, the plant that delights in the sea-spray. It was also sometimes called Guardrobe, being "put into chests and presses among clothes, to preserve them from mothes and other vermine."

Rue.

(1) *Perdita.* For you there's Rosemary and Rue.
Winter's Tale, act iv., sc. 3. (See Rosemary No. 1).

(2) *Gardener.* Here did she fall a tear ; here in this place
I'll set a bank of Rue, sour Herb of Grace :
Rue, even for ruth, here shortly shall be seen,
In the remembrance of a weeping queen.
Richard II., act iii, sc. 4.

(3) *Ophelia.* There's Rue for you ; and here's some for me : we may call it Herb-grace o' Sundays : O, you must wear your Rue with a difference.
Hamlet, act iv., sc. 5.

(4) *Clown.* Indeed, sir, she was the Sweet Marjoram of the salad, or rather the Herb of Grace.
Lafeu. They are not salad-herbs, you knave, they are nose-herbs.
All's Well That Ends Well, act iv., sc. 5.

Here are two names for the same plant, Rue and Herb of Grace, and though at first sight there seems to be little or no connection between the two names, yet really they are so closely connected that the one name was derived from or rather suggested by the other. Rue is the English form of the Greek and Latin *ruta*, a word which has never been explained, and in its earlier English form of *rude* came still nearer to the Latin original. But *ruth* was the English word for sorrow and remorse, and *to rue* was to be sorry for anything; we still say a man will rue a particular action, *i.e.*, be sorry for it; and so it was a natural thing to say that a plant which was so bitter, and had always borne the name *Rue* or *Ruth*, must be connected with repentance. It was, therefore, the Herb of Repentance, and this was soon transformed into the Herb of Grace (in 1838 Loudon said, "it is to this day called Ave Grace in Sussex"), repentance being the chief sign for Grace; and it is not unlikely that this idea was strengthened by the connection of Rue with the bitter herbs of the Bible, though it is only once mentioned, and then with no special remark, except as a tithable garden herb, together with Anise and Cummin.

The Rue, like Lavender and Rosemary, is a native of the more barren parts of the coasts of the Mediterranean, and has been found on Mount Tabor, but it was one of the earliest occupants of the English Herb garden. It is very frequently mentioned in the Saxon Leech books, and entered so largely into their prescriptions that it must have been very extensively grown. Its strong aromatic smell, and bitter taste, with the blistering quality of the leaves, soon established its character as almost an heal-all.

Rew bitter a worthy gres (herb)
Mekyl of myth and vertu is.
Stockholm MS. 1305.

Even beasts were supposed to have discovered its virtues, so that weasels were gravely said, and this by such men as Pliny, to eat Rue when they were preparing themselves for a fight with rats and serpents. Its especial virtue was an eye-salve, a use which Milton did not overlook—

To nobler sights
Michael from Adam's eyes the filme removed
Which that false fruit which promised clearer sight
Had bred ; then purged with Euphrasie and Rue,
The visual nerve—for he had much to see.
Paradise Lost, B. 11.

and which was more fully stated in the old lines of the Schola Salerni—

Nobilis est Ruta quia lumina reddit acuta ;
Auxilio rutæ, vir lippe, videbis acute ;
Cruda comesto recens oculos Caligine purgat ;
Ruta facit castum, dat lumen, et cogent astum ;
Cocta facit Ruta et de pollicibus loca tuta.

After reading this high moral and physical character of the herb, it is rather startling to find that "it is believed that if stolen from a neighbour's garden, it would prosper better." As other medicines were introduced the Rue declined in favour, so that Parkinson spoke of it with qualified praise—"Without doubt it is a most wholesom herb, although bitter and strong. Some do rip up a bead-rowl of the virtues of Rue . . . but beware of the too frequent or overmuch use thereof." And Dr. Daubeny says of it, "it is a powerful stimulant and narcotic, but not much used in modern practise."

As a garden plant, the Rue forms a pretty shrub for a rock-work, if somewhat attended to, so as to prevent its becoming straggling and untidy. The delicate green and peculiar shape of the leaves give it a distinctive character, which forms a good contrast to other plants.

Rush.

(1) *Rosalind.* He taught me how to know a man in love, in which cage of Rushes I am sure you are not prisoner.
As You Like It, act iii., sc. 2.

(2) *Phœbe.* Lean but on a Rush,
The cicatrice and capable impressure
Thy palm some moment keeps.
Ibid., act iii., sc. 5.

(3) *Clown.* As fit as Tib's Rush for Tom's fore-finger.
All's Well That Ends Well, act ii., sc. 2.

(4) *Romeo.* Let wantons light of heart
Tickle the senseless Rushes with their heels.
Romeo and Juliet, act i., sc. 4.

(5) *Dromio.* Some devils ask but the parings of one's nails,
A Rush, a hair, a drop of blood, a pin,
A Nut, a Cherry-stone.
Comedy of Errors, act iv., sc. 3.

(6) *Bastard.* A Rush will be a beam
To hang thee on.
King John, act iv., sc. 3.

(7) 1st *Groom.* More Rushes, more Rushes.
2nd Henry IV., act v., sc 5.

(8) *Eros.* He's walking in the garden—thus ; and spurns
The Rush that lies before him.
Antony and Cleopatra, act iii., sc. 5.

(9) *Othello.* Man but a Rush against Othello's breast,
And he retires.
Othello, act v., sc. 2.

(10) *Grumio.* Is supper ready? the house trimmed, Rushes strewed, cobwebs swept?
Taming of the Shrew, act iv., sc. 1.

(11) *Katherine.* Be it moon or sun, or what you please,
And if you please to call it a Rush candle,
Henceforth I vow it shall be so for me.
Ibid., act iv., sc. 5.

(12) *Glendower.* She bids you on the wanton Rushes lay you down
And rest your gentle head upon her lap.
1st Henry IV., act iii., sc. 1.

(13) *Marcius.* He that depends
Upon your favours swims with fins of lead
And hews down Oaks with Rushes.
Coriolanus, act i., sc. 1.

(14) *Iachimo.* Our Tarquin thus
Did softly press the Rushes.
Cymbeline, act ii., sc. 2.

(15) *Senator.* Our gates
Which yet seem shut, we have but pinned with Rushes;
They'll open of themselves.
Coriolanus, act i., sc. 4.

(16) And being lighted, by the light he spies
Lucretia's glove, wherein her needle sticks:
He takes it from the Rushes where it lies.
Rape of Lucrece.

(17) *Cæsar.* This common body,
Like to a vagabond Flag upon the stream,
Goes to and back, lackeying the varying tide,
To rot itself with motion.
Antony and Cleopatra, act i., sc. 4.

I place the Flag (No. 17) among the Rushes with some hesitation. We now commonly call the Iris a Flag, and in Shakespeare's time the Iris pseudo-acorus was called the Water Flag, and so the passage might, perhaps, have been placed under Flower-de-Luce. But I do not think that the Flower-de-Luce proper was ever called a Flag at that time, whereas we know that many plants, especially the Reeds and Bulrushes, were called in a general way Flags. This is the case throughout the Bible, the language of which is always a safe guide in the interpretation of any cotemporary literature. The mother of Moses having placed the infant in the ark of Bulrushes "laid it in the flags by the river's brink." Job and Isaiah also mention the Flag as a water plant, and it is certain that in none of these places is the Water Iris referred to. I conclude, therefore, that when Shakespeare named the Flag he meant any long-leaved waterside plant that is swayed to and fro by the stream, and that, therefore, the proper place for his Flag is among the Rushes. For, like the Reed, the Rush often stands generally for any water-loving, grassy plant, and, like the Reed, it was the emblem of yielding weakness, and of uselessness. The three principal Rushes referred to by Shakespeare are the Common Rush (Juncus communis), the Bulrush (Scirpus lacustris), and the Sweet Rush (Acorus Calamus).

The common Rush, though the mark of badly cultivated ground, and the emblem of uselessness, was not without its uses, some of which are referred to in Nos. 1, 3, and 11. In No. 3, reference is made to the Rush-ring, a ring, no doubt, originally meant and used for the purposes of honest betrothal, but afterwards so vilely used for the purposes of mock marriages, that even as early as 1217, Richard Bishop of Salisbury had to issue his edict against the use of "annulum de junco." But the uses of the Rush were not all bad. Newton, in 1587, said of the Rush—"it is a round smooth shoote without joints or knots, having within it a white substance or pith, which being drawn forth, showeth like long white soft geatte and round thread, and serveth for many purposes. Heerewith be made manie pretie imagined devises for Bride-ales and other solemnities, as little baskets, hampers, frames, pitchers, dishes, combs, brushes, stooles, chaires, purses with strings, girdles, and manie such other pretie and curious and artificiall conceits, which at such times many do take the paines to make and hang up in their houses, as tokens of good will to the new married Bride; and after the solemnities ended, to bestow abroad for Bride-gifts or presents." It was this "white substance or pith" from which the Rush candle (No. 11) was and still is made: a candle which in early days was probably the universal candle, which, till within a few years, was the night candle of every sick chamber—in which most of us can recollect it as a most ghastly object as it used to stand, "stationed in a basin on the floor, where it glimmered away like a gigantic lighthouse in a particularly small piece of water" ("Pickwick")—till expelled by the night-lights, and which is still made by Welsh labourers, and, I suppose, in Shakespeare's time was the only candle used by the poor.

If your influence be quite damm'd up
With black usurping mists, some gentle taper,
Though a Rush-candle from the wicker hole
Of some clay habitation, visit us
With thy long levell'd rule of streaming light.
Comus.

But the chief use of Rushes in those days was to strew the floors of houses and churches (Nos. 4, 7, 10, 12, and 14). This custom seems to have been universal in all houses of any pretence. "William the son of William of Alesbury holds three roods of land of the Lord the King in Alesbury in Coun. Buck by the service of finding straw for the bed of the Lord the King, and to strew his chamber, and also of finding for the King when he comes to Alesbury straw for his bed, and besides this Grass or Rushes to make his chamber pleasant."—"Blunt's Tenures." The custom went on even to our own day in Norwich Cathedral, and the "picturesque custom stil lingers in the West of strewing the floors of the churches on Whit Sunday with Rushes freshly pulled from the meadows. This custom attains its highest perfection in the church of St. Mary Redcliffe at Bristol. On 'Rush Sunday' the floor is strewn with Rushes. All the merchants throw open their conservatories for the vicar to take his choice of their flowers, and the pulpit, the lectern, the choir, and the communion rails and table present a scene of great beauty."—The Garden, May, 1877.

For this purpose the Sweet-scented Rush was always used where it could be procured, and when first laid down it must have made a pleasant carpet; but it was a sadly dirty arrangement, and gives us a very poor idea of the cleanliness of even the best houses, though it probably was not the custom all through the year, as Newton says, speaking of Sedges, but evidently confusing the Sedge with the sweet-scented Rush, "with the which many in this countrie do use in sommer time to straw their parlours, and churches, as well for cooleness as for pleasant smell." This Rush (Acorus Calamus) is a British plant, with broad leaves, which have a strong Cinnamon-like smell. Another (so-called) Rush, the Flowering Rush (Butomus umbellatus) is one of the very handsomest of the British plants. On a long straight stem it bears a large umbel of very handsome pink flowers, so sweet-scented that the old Saxon name of the whole plant was Beewort. Wherever there is a pond in a garden, these fine Rushes should have a place, though they may be grown in the open border where the ground is not too dry.

There is a story told by Sir John Mandeville in connection with Rushes which is not easy to understand. According to his account, our Saviour's crown of thorns was made of Rushes! "And zif alle it be so that men seyn that this Croune is of Thornes, zee shall undirstande that it was of Jonkes of the See, that is to sey, Rushes of the See, that prykken als scharpely as Thornes. For I have seen and beholden many times that of Parys and that of Constantynoble; for thei were bothe on, made of Russches of the See. But men have departed hem in two Parties, of the which o part is at Parys, and the other part is at Constantynoble—and I have on of the precyouse Thornes, that semethe licke a white Thorn, and that was zoven to me for great specyaltee. . . . The Jewes setten him in a chayere and clad him in a mantelle, and then made thei the Croune of Jonkes of the See."—"Voiage and Travaile," c. 2.

I have no certainty to what Rush the pleasant old traveller can here refer. I can only guess that as Rushes and Sedges were almost interchangeable names, he may have meant the Sea Holly, formerly called the Holly-sedge, of which there is a very appropriate account given in an old Saxon runelay thus translated by Cockayne—"Hollysedge hath its dwelling oftenest in a marsh, it waxeth in water, woundeth fearfully, burneth with blood (*i.e.* draws blood and pains) every one of men who to it offers any handling." H. N. Ellacombe.

(To be continued).

PLATE LXXXIV.

THE ZEPHYR FLOWERS

(WITH COLOURED FIGURES OF ZEPHYRANTHES ROSEA AND TUBISPATHA).

Drawn by H. NOEL HUMPHREYS.

This beautiful genus, which has not inaptly been termed the Crocus of America, includes about fourteen species, the geographical range of which extends from the meadows of Virginia through Mexico, the West Indies, Peru, Chili, and Buenos Ayres, those growing nearest the equatorial line occurring relatively at the greatest elevation. They are low-growing, bulbous plants, with linear leaves which appear in spring with or before the blossoms, and solitary (or occasionally two) white or rosy pink Crocus-like six-petalled flowers, which are often large and handsome. By some botanists, Zephyranthes is regarded as a section of Amaryllis, from which it differs in the one-flowered scape and in one or two technical details. Several species are in cultivation, of the best of which we give a description. They require rest during the winter, and at that season are best kept dry, being planted out in the full sun in spring in very sandy soil. They also do well in the greenhouse, planted four or six in a pot. They are increased by means of offsets. Botanists place them in two sections, in the first of which the germen is stalked, while in the second it is sessile.

Section A.—Germen stalked.

Zephyranthes Atamasco (Atamasco Lily).—This handsome plant, which is an old inmate of our gardens (having been cultivated in England in 1680 by Mr. Charles Hatton) is a native of North America (Pennsylvania, Carolina, Virginia, Florida, &c.), where it is a conspicuous ornament of damp places in woods and fields, presenting, when in flower, a very beautiful appearance. It has linear, strap-shaped, glossy leaves, which appear at the same time as the blossoms, which they slightly exceed in height; the blossoms are about 3 in. long, borne singly upon a scape 6 in. high; they are white within, the three outer segments of the perianth being striped with rose-colour. This species flowers from May to July, usually during the last named month. It grows well in the open border, and increases rapidly by offsets, which should be removed and divided in the spring of every third or fourth year.

Z. carinata.—This pretty species has linear, channeled, keeled leaves, which are reddish at the base. The scape, which is 6 in. high, bears a delicate rosy flower 2 in. or 3 in. in length, with obovate, oblong, pointed segments. It blossoms freely in the greenhouse if kept dry in winter, and should be grown in a light sandy loam. This species is widely distributed in South America, from Mexico to Brazil, occurring also in Jamaica. The offsets diverge obliquely, so that their leaves pierce the ground at some distance from the parent, forming, as Herbert observes, "a circle of satellites round it, as if the plant were stoloniferous (which is not, however, the case) instead of making a close tuft like striata, tubispatha, &c."

Z. tubispatha.—This species has few linear green (sometimes rather glaucous) channeled leaves, about as long as the spathe and as thick as a quill; the scape has a bifid spathe, half as long as the pedicel, bearing a white, slightly fragrant flower, from 2 in. to 3 in. long, with lanceolate subequal segments, which are greenish below; the tube is very short, somewhat rounded within by the bending of the filaments. It is a native of Antigua and of the Blue Mountains of Jamaica, and is properly a stove plant, requiring a sandy soil, rest in winter, and plenty of water in summer. A pretty pink hybrid was obtained by Herbert from this species crossed by Z. carinata; this is sometimes met with in cultivation under the name of Z. Spofforthiana.

Z. rosea.—This beautiful species has bright green, narrow, recumbent leaves longer than the one-flowered scape; the flowers are of a bright rose-colour, erect, regular, and funnel-shaped. It is a native of the mountains of Cuba. A variety, described as having only two leaves (and hence called bifolia) and a more robust scape, is found in the woods of St. Domingo and Cayenne.

Section B.—Germen sessile.

Z. candida.—This very beautiful plant has, like the first, the advantage of being perfectly hardy; at least, so we learn from Dean Herbert, its original describer, who speaks with surprise of the fact that a plant which thrives in the hot valley of Lima should have stood with him out-of-doors unprotected for nine or ten years without ever entirely losing its leaves. It resists, he says, "the severest frosts of our usual winters, and has ripened its seeds with me after snow had lain upon them for three weeks. I have seen the quicksilver 15° below freezing point (Fahr.) without its losing more than the ends of its leaves." Z. candida has linear, fleshy, quite smooth, semi-cylindrical, Rush-like leaves, more than double the length of the scape; the scape is about 4 in. high, sloping towards the sun, with a purplish spathe and handsome, brilliant white flowers, which are greenish at the base, and spread out widely in the sunshine, usually lasting only a day. It produces flowers in quick succession during August, September, and the beginning of October. Herbert says he has had seventy blossoms expanded at once on a small patch of the plants. This species is a native of Buenos Ayres, where it is stated that the banks of the River La Plata are so covered with it that it is understood that the river took its name (which means silver) from the profusion of these white flowers upon its shores. It is abundant in old gardens in the valley of Lima, where its blossoms attain a large size. Herbert mentions a variety from Buenos Ayres which has flowers externally suffused with red, and also a larger form from the same district, in which the blossoms are fully 3 in. across. This species increases rapidly by offsets, and should be extensively cultivated. Herbert says there is "a little mystery" as to the expansion of its flowers. He had seen them open quite flat in warm sunshine, but nevertheless, in very cold, gloomy weather with a north wind, its blossoms were seen standing about three-quarters expanded at night; a few days after, when the wind was south-west and warmer, the flowers were not nearly so open even in the day, as if its expansion depended on the dryness of the atmosphere. It grows especially well in a warm sheltered border at the bottom of a south wall.

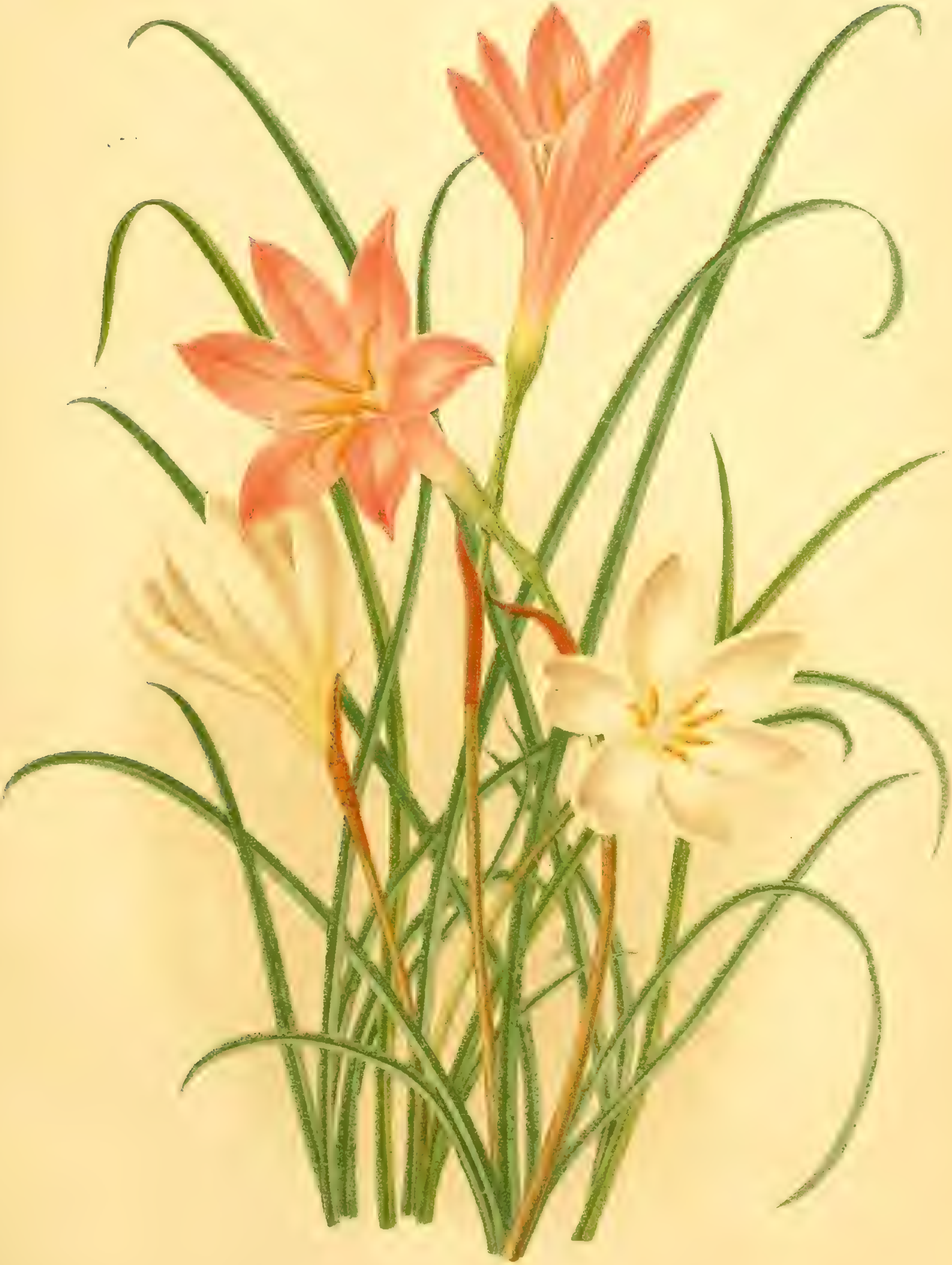
Another species of this section (Z. sessilis) is sometimes met with in cultivation. Two varieties have been described (Z. verecunda and Z. striata) having slender leaves and white flowers more or less tinged with red on the outside. B. J.

DISTINGUISHING HEMLOCK.

The Hemlock (Conium maculatum), will be in perfection in a week or two, and is already being gathered for making extract. This plant is very similar in appearance to many other umbelliferæ, but is easily distinguished by certain characters. Although the smooth spotted stem is very characteristic, yet the spots are often present only on the lower portion of the stem. The plant which most closely resembles it in appearance is Fool's Parsley (Æthusa Cynapium), which may be distinguished as follows:—Underneath each partial umbel there are three long pendent bracts, but there is no general involucre. The fruit has vittæ, two of which form very distinct lines on the flat surface of the half fruits, and the ridges on the fruit are not crenated. The leaves also have brownish points to every segment, and are minutely serrated below each point. The serrated character is easily seen with a lens. In Conium each partial umbel has three, or rarely four, short bracts, which do not surround the stalk, but are placed on the outer side of it. The fruit has no vittæ whatever, and the ridges of the fruit are minutely crenate, and the leaves have minute white points to every segment, which are quite entire below the points. The only fruit with which that of Conium could be well confounded is the Russian Aniseed, which is very similar in shape, size, and colour, but is seen by the aid of a lens to be covered with minute white hairs. Two other plants are known in this country under the name of Water Hemlock, which must not be confounded with the true Hemlock. One of these (Œnanthe crocata), is not uncommon in ditches and damp places in woods. It may be recognised by the somewhat cylindrical fruit, which has two long erect styles, by the wedge-shaped segments of the leaves, and by the roots consisting of five large fusiform tubercles. It is properly called Hemlock Water Dropwort, but is often confounded with the true Water Hemlock (Cicuta virosa), a much rarer plant, found here and there in the midland counties, but rarely seen in the south of England. The leaves have narrowly lanceolate, serrate segments, and the fruit is spherical, like that of Coriander, but rather smaller. Both plants are extremely poisonous, and fatal accidents have frequently happened through persons eating the root of Œnanthe crocata, which has a not unpleasant taste, death usually resulting in two hours after partaking of it, and sometimes even in so short a space as half-an-hour. Most cases of poisoning reported as owing to Water Hemlock are probably caused by the Hemlock Water Dropwort, the Cicuta virosa being comparatively rare, and having a simple non-tubercular root, which is not very likely to be eaten.—"Pharmaceutical Journal."

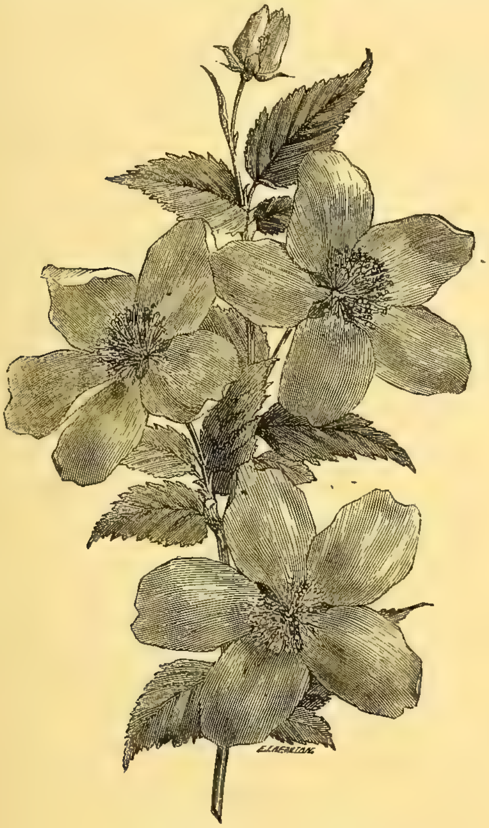
A gentleman has undertaken to supply fruit trees for planting 5 out of the 20 acres of land in Worcestershire belonging to the St. George's Company.

Supplement to *The Garden*, Office· 37, Southampton Street, Covent Garden, London, W C



THE SINGLE KERRIA.

Double flowers have hitherto been so much sought after that the single form, from which they arose, is sometimes lost to cultivation. The single Banksian Rose, for example, is a rarity, though we can say, from seeing it in the south of France in flower, that it is a charming bush. It is the same with the Kerria, of which the common form is the double one—a well-known old favourite; but the single form is the most beautiful of the two. Those who wish to add a really elegant shrub to their hardy collections should try and secure it.



Single-flowered Kerria japonica.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

The admirable manner in which the Chairman at the Thirty-fourth Anniversary Festival urged the claims of necessitous gardeners, causes regret that such well-meant endeavours should fail to enlist the active support of those for whose benefit the Institution was founded; for even the most favourable view that can be taken of the extent of its operations, contrasted with the wide field that exists for such an Institution, must convince the most sceptical that, as far as the majority of gardeners is concerned, the Institution is practically a failure. It awakens no feeling of security amongst those who, to the best of their ability, endeavour to provide for age and infirmity, accident or disease, for although gardeners, as a rule, are temperate and therefore healthy men, they enjoy no special advantages as regards immunity from the ills that "flesh is heir to." Indeed, some of their work in forcing-houses, where high, moist atmospheres are maintained, and the great and sudden variations of temperature to which they are exposed, have a weakening and enervating effect upon them, as many know to their cost. But it is urged—Why do not these young men join the Gardeners' Royal Benevolent Institution? From my own observation and experience, I should say for the following reason:—Gardeners, if really so in anything but name, are led by the nature of their calling and everyday experience to look for "practical results" as the criterion of worth in reference to every operation which they undertake, and although there are no lack of visionary schemes inaugurated under the name of gardening, the great bulk of the order are only found practising and employing those means that rest on the solid basis of past experience, as affording a reasonable hope of success in the future. Now I can truly say that "The Gardeners' Royal Benevolent" is about the last Institution to which young gardeners look as affording a reasonable hope of support in their time of need. For the benefits which it offers are not only entirely inadequate to meet the most urgent wants of bare existence, but there is nothing definite as to when these slender means of support will be obtainable. For those in the most urgent need of pecuniary support would, as a rule, be equally in need of "friends" to give the necessary votes, and would in all probability have the mortification of seeing more favoured candidates placed on the list, while they went empty away. It is perhaps ungracious to even question the acts of a charity that receives such generous support both from Royalty and the aristocracy generally, but the glossing over or altogether withholding the reasons that keep the rank and file of gardeners from actively supporting an Institution intended for their benefit will never increase its popularity. "Gilding a hive will not make the working bees take to it." The Gardeners' Royal Benevolent Institution labours under the great disadvantage of being partially composed of benefit members, and yet it draws its principal revenue from those who subscribe through purely benevolent motives. The largest item of revenue is derived from donations after the annual anniversary festival dinner—a very precarious source, and, of course, greatly influenced by the pleading, good or otherwise, of the chairman, whose kindly expressions of sympathy and regard for necessitous members of the craft are highly valued by those who have no wish to share in the pecuniary benefits of the Institution. For I should say that by far the greater proportion of gardeners that subscribe do so from purely benevolent motives, in order to assist their less fortunate brethren, and I believe that still more would subscribe if the charity were purely benevolent, as I never yet found gardeners slow to alleviate any real case of distress. But the weak point of the charity is that which affects benefit members, and, unfortunately, gardeners can seldom afford to be anything else. In their young days the majority of them become members of some well-established society that will guarantee the means of existence when incapacitated from following their usual occupation, or they become entitled to an annuity on arriving at a fixed age—not as a charity or by the precarious means of voting papers, but as a right; and gardeners, as well as other men, like to eat the bread of their own industry, in preference to becoming a burden to the generous donors of this or any other society, who, as a rule, have many and urgent calls upon their support. As a gardener myself, and closely associated with improvers, foremen, and even head gardeners I can confidently say that all would welcome and support a society composed exclusively of gardeners, and for their benefit. But if such a society is to flourish, its aim and purposes must be clear and definite, or so practical a class of men will continue to do, as they do now, viz., stand aloof. They do not begrudge thanks to those who, from philanthropic motives and a pure love of gardening, subscribe freely to the only Institution that exists for the benefit of those who are left in needy circumstances while engaged in some of the varied departments of horticulture. But those who would join as ultimate benefit members need think it no disgrace that they are compelled by circumstances to invest the small surplus at disposal, with perhaps more than ordinary care, for self-preservation comes by instinct and overpowers the higher motives of benevolence. While yielding to no one in love for my calling, I cannot disguise the fact that many who enter on its apparently rosy paths with high expectations in youth, too often find them thorny in the autumn of life. All honour therefore to those who from their abundance endeavour to solace the declining years of those who are vanquished in the fight. But let it not be thought that gardeners are negligent of one of the first duties of a citizen, if they do not, as at present constituted, support "The Gardeners' Royal Benevolent Institution." James Groom.

Henham.

Rustic Gates.—It is a great fault of much of the rustic work now made, in the minor articles of baskets, chairs, and seats, as well as in the more important structures of gates, pavilions, summer-houses, &c., that they not only do not look permanent, but are really slightly put together and frail. More thought appears to be given to the ingenious fitting of crooked sticks, than to the enduring character of the structure. There is scarcely anything about a place that gives more trouble by getting out of order, than a much-used entrance-gate. Even when constructed with all the care that can be given to straight timber, and braced and bolted in the most approved manner, it often requires repairing. When it comes to the irregular forms used in rustic work, the difficulty of making a durable article greatly increases, and we have not seen a gate of this kind that did not soon become a nuisance. If one feels that he must build a rustic gate, then let it be put together in every part with bolts, and extra care be taken in the bracing, even to some sacrifice of "rusticity."

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Vineries.—Amateurs who started their Vines with a little warmth about the beginning of March, will have the fruit now commencing to colour; as soon as this is observable, gradually withhold moisture from the atmosphere and leave on about half-an-inch of air back and front during the night. Where the fruit is desired ripe early, the house should be closed in the afternoon whilst the sun is on the glass, so as to allow the temperature to rise considerably for two or three hours, after which a little air as already recommended should be admitted. Where plants are grown with late Vines overhead the plants should be placed in frames or out-of-doors for some weeks to come, as unless the Vines are pushed on by closing the house early in the afternoons, the crop, which this year is unusually late excepting where fire-heat has been employed in the spring, will not ripen before the autumn is too far advanced; the night temperature, consequent upon this shutting-in of sun-heat with the accompanying moist condition of the atmosphere necessary to exist with it, would be very injurious to the plants, unless in the case of late-flowered Camellias, and Azaleas that have not yet completed their growth, which will be exactly suited by it; but where Azaleas are grown under Vines they should be carefully examined every fortnight or three weeks to see that they are clear from thrips, on the appearance of which the plants should be immediately dipped in or syringed with Tobacco water; which operation will prevent these pests from attacking the Vines. Air must still be given in the mornings as soon as, or before, the sun comes upon the glass, but the house should be shut up by three or four o'clock, according to the state of the weather. With a view to keeping the Vines clear from red spider, a fine-rosed syringe should be used at the time of shutting up the house until the fruit begins to colour, for although the bloom that adds so much to the appearance of the fruit will be somewhat reduced by the application of water, yet this is of much less consequence than keeping the foliage free from this troublesome little insect; the whole of the under side of the leaves should be wetted, at the same time care should be taken not to wet the bunches more than can be avoided. Those who have not had much experience in Grape-growing should look over the leaves of their Vines once a week, to see that they are free from this insect; its presence is easily detected by a little discoloration in the leaves, as it very soon gives them a slightly brown tinge observable when looking through them with the light above; it most usually makes its appearance about the base of the Vines, and when confined to comparatively few leaves it may be kept from spreading by the careful use of a soft sponge and clean water applied to both the under and upper surfaces of the leaves. Nothing should be left undone to keep the foliage free from it, as where it once obtains any ascendancy, it is impossible to colour Grapes properly; although so diminutive, it punctures and sucks the sap from the leaves to an extent that quickly renders them incapable of performing their allotted functions, and the mischief does not end with the defects in the fruit of the present season, but the Vines are rendered weaker for the future. Where any portion of the roots is inside the house, the border must be well supplied with water, any deficiency in this matter whilst the fruit is swelling being fatal to its well-being. If the Vines be at all deficient in strength, or carry a heavy crop, the roots both inside and outside should be well soaked with manure-water; but this must not be applied later than within two or three weeks of the crop beginning to colour, otherwise the flavour may be affected. Keep the laterals stopped more or less closely proportionately with the amount of foliage that exists, remembering that the more healthy leaves the Vines carry, the better they will succeed. When kept closely stopped in to such an extent as is frequently practised, Vines do not long remain in a satisfactory state.

Peaches.—Where Peaches have been gathered, to keep the leaves free from red spider and in a healthy condition the trees should have a copious washing with clean water: the garden engine is the best means of applying it, failing it the syringe. This operation must not be confined to merely sprinkling the leaves, but the whole of both their upper and under surfaces as well as the wood, should have a thorough washing. Admit plenty of air night and day and see that the roots receive enough moisture, for any deficiency in that respect will cause a premature stagnation in the development of the fruit-buds for another year.

Roses.—Amateurs who grow Roses will derive additional pleasure in the cultivation of their plants if they bud them themselves. A few stocks procured every autumn and planted 1 ft. apart in a row in any spare ground in the garden will be in a condition for budding the following summer. Growth with these as with most things has this season been late, consequently neither the shoots of the stocks nor the buds to be inserted have been in a condition for operating upon as in ordinary years; but they may be budded now.

Dahlias and Hollyhocks, where they require it, must be secured with sticks; it is not necessary to use very tall ones for Hollyhocks (as is sometimes supposed), unless the plants are in an exposed situation, which they ought not to be; but the sticks should be strong and inserted in the ground to a considerable depth, in which case if they stand 4 ft. above the surface they will be found to be a sufficient support. The practice of tying Dahlias to one or two single sticks with all the shoots drawn together in the shape of a broom should never be followed; it gives them a most unnatural and unsightly appearance, and seriously injures them through the non-admission of light and air to the foliage; use from three to six sticks so as to tie the shoots out. These being gross-feeding plants with a great portion of their roots lying in a horizontal position just under the surface of the soil, 2 in. of rotten manure should be applied. In gardens where high-class culture is carried out, and where a neat appearance of the beds is looked for, manure when applied as a mulching to these or any other plants should be sufficiently decomposed so that it will crumble to a fine condition, and if thinly covered with a little sifted leaf-mould, the requisite protection can be afforded to the roots of the plants without any objectionable appearance. All late summer and autumn flowering perennials that require any support must have the sticks put to them immediately, always remembering that the less to be seen of the sticks and ties so used the better. Any one possessing good strains of Delphiniums, Sweet Williams, or any similar plants, should secure the seeds as they become ripe, selecting them from the best marked flowers, otherwise they are apt to degenerate. The beautiful Auricula-eyed Sweet Williams that some years ago were to be met with appear now to be all but lost, and have given place to a race of muddy-coloured flowers that have nothing to recommend them: this is much to be deplored, as even for ordinary decorative purposes, a well-marked flower of any description with the colours properly defined will always be more attractive to the general observer.

Pinks.—Amongst hardy plants, there are few more deserving of cultivation than Pinks; they require little room, and are especially adapted for amateurs, their deliciously-scented and beautifully-marked flowers rendering them suitable for cut purposes of all kinds: two or three blooms will fill a room with their agreeable perfume. It is now time to put in the cuttings, or pipings as they are usually called; these should be made from the young shoots that spring from the bottom of the plants, and in a condition neither too hard nor too soft; put them in fine sifted soil, to which has been added some leaf-mould and sand, inserting them 1 in. apart, and covering with a hand-light or bell-glass. The shady side of a Currant bush, or any position where they will be screened from the rays of the sun is suitable for them; all the attention they need is keeping them sufficiently moist, and occasionally examining them, removing any that have damped off and are mouldy. When well rooted in the autumn, they may be planted out three or four together at intervals in the borders, or still better, in a small bed of prepared soil, allowing them to remain through the winter, and flower the ensuing spring.

Pears on walls, espaliers, and trained pyramids, will in most places now be in a condition to have their summer growth removed. There are two methods of carrying out this necessary operation, one of which used to be much more common than it is at the present time:—This consists of breaking the shoots about two-thirds through at 4 in. or 5 in. above the base of whence they spring, leaving them hanging with the remaining portion of the wood and bark for a few weeks, removing them afterwards; this has the effect of checking further growth in the shoots, and directs the energies of the trees to the formation and development of the fruit-buds. The shoots are in this manner operated upon a little before their growth is complete; it entails more labour, but in some cases, with vigorous trees, it is better calculated to induce a fruitful condition than the more ordinary practice of allowing the shoots to remain untouched until their growth is complete, when they are cut off altogether at about 1 in. above the base; but where this course is followed, on no account should they be taken off till their growth is quite completed, which is easily discernible by the terminal leaf at the point of the shoot having attained something approaching its full size, and exhibiting a bud at the base. If the shoots be taken off whilst the points are soft and in a growing state, some of the buds below (that should ultimately produce fruit) will at once break into growth, a circumstance by all means to be avoided. Apples that are trained or grown bush-fashion, and are required to be kept within certain limits as to size, should have their summer growth similarly dealt with, but in all cases the operator ought to bear in mind that with trees whose heads are thus confined within certain limits, if the root-power of the individual tree be in excess of branch development, nothing which can be done by shoot-pruning will bring them into a fruitful state, but generally the reverse. In the case of trees that by their excessive vigour evince too great a preponderance of root-power, means should be taken to curtail this a little later on.

Cherries on walls ought also to have their summer shoots similarly removed, as also Plums; it is not advisable to keep the latter too closely cut in, as they generally bear better when permitted to extend a little.

Raspberries.—It will be well to go over these again and remove any suckers that may have sprung up since the first thinning.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

July 30.—Sowing Wheeler's Imperial and Carter's Heartwell Early Marrow Cabbage, also Fraser's Broad-leaved and Green Curled Endive on border previously well watered. Planting out the last rows of Celery in trenches, in which has been put a good supply of well-rotted manure to which had previously been added soot and salt at the rate of 25 lb. of the former and 1 bushel of the latter to the load. Preparing three-light frames and planting them with Cucumbers. Putting Jargonelle Pears in gauze bags to protect them from wasps, &c. Nailing and tying-in leading shoots of Peaches and Nectarines. Tying-out and picking blooms off Fuchsias intended for exhibition at the end of August. Picking over borders of carpet bedding. Taking lights off early Peach house, and well watering the borders. Laying Strawberry runners in pieces of turf, 4 in. square, which have previously been soaked in manure-water. Fruit in use for dessert:—Pines, Melons, Grapes, Peaches, Nectarines, Apricots, Figs, Plums, Gooseberries, and Currants.

July 31.—Sowing Black-seeded Brown Cos and All the Year Round Lettuce, Red and White Turnip Radish, also a large border of Early Horn Carrots for autumn use. Potting a large batch of Primulas and Cinerarias for supplying cut flowers. Taking up and stowing away Shallots and Garlic in a cool shed. Earthing-up Celery whilst it is perfectly dry. Turning a large heap of manure for Mushroom bed. Stopping laterals through all Vineries where the fruit is ripening. Hoeing, cleaning, and watering amongst late Peas. Taking up a border of Early Ashleaf Kidney Potatoes and laying them in the sun to get green for seed. Watering Celery and Cauliflowers. Commenced summer pruning of Apples and Pears.

August 1.—Sowing Turnips. Putting in a few Pelargonium cuttings. Staking Chrysanthemums. Tying out Tricolor Pelargoniums for exhibition. Pruning and nailing Plum trees. Clearing off a large piece of Peas, and digging the ground for other crops. Pulling up pickling Onions and laying them out to dry. Stopping and nailing the shoots of Tomatoes on walls. Giving the late Vineries a good soaking of guano-water. Watering the Pines all through; also Celery, Broccoli, Lettuce, and Endive.

Aug. 2.—Sowing Mignonette in pots; also Telegraph Cucumber. Planting two three-light pits with Parsley for winter use. Renovating linings round all Melon and Cucumber frames. Digging large piece of ground (previously occupied by Peas) for Cabbages. Gathering Apricots and Gooseberries for preserving. Earthing up Cardoons and Celery. Dutch-hoeing amongst Gooseberries and Currants. Giving carpet bedding and other borders a good soaking of water.

Aug. 3.—Sowing large piece of Spinach; also in a pit Osborn's Early Forcing Bean to succeed the outdoor crops. Planting-out Wheeler's Imperial and Carter's Heartwell Early Marrow Cabbage, on ground previously occupied by Peas, and well watering them. Re-potting batch of Ferns and Dracænas for dinner table. Cutting last few bunches of Black Hamburgh Grapes, and putting their stalks in bottles of water so that the house may be thrown open in order to ripen the wood. Spawning Mushroom bed at a declining temperature of 80°. Earthing-up Leeks, thinning Turnips and Spinach, gathering Tomatoes from plants grown in pots in Pine-houses. Watering out-door Tomatoes, late-planted Celery, Carrots, and Radishes.

Aug. 4.—Sowing a bed of Early White Naples Onions for use in spring. Pulling up one portion of spring-sown Onions to dry. Weeding and cleaning Box edging in kitchen garden. Rolling gravel walks after rain. Gathering Gherkins, Cucumbers, Cauliflower, Onions, &c., for mixed Pickles. Clearing off large piece of Raspberry canes; also a piece of Broad and Dwarf Beans. Putting together six cartloads of manure, adding 20 lb. of salt, and one bushel of soot to the load, and giving the whole a good turning for Celery trenches. Watering Peach-house; also Cabbage plants, Lettuce, Endive, and Scarlet Runner Beans.

Hardy Flowers.

ANNUALS.—It is in the flower fields at Dedham and St. Osyth that one can see annuals in perfection; the land is well suited to them, and it is thoroughly and richly tilled; it is kept clean and clear from weeds, and every attention is paid to secure a fine head of bloom and an abundant harvest of seed. What marvellous patches of colour are seen bordering the valley of the Stour at Dedham! Take, for instance, Dunnett's extra dwarf crimson Candytuft, which is of a rich reddish-purple hue when in full bloom, and one of the finest selections found in this group; or the glowing carmine-red of Clarkia integripetala pulcherrima; the deep crimson of Viscaria cardinalis; the golden radiance of Eschscholtzia crocea; the brilliant orange-scarlet of Nasturtium Tom Thumb Scarlet; the striking vermilion hue of Nasturtium King of Tom Thumbs; the soft snow-white of Leptosiphon densiflorus albus; the azure-blue Nemophila insignis, and the charming rosy-pink of the Red Lavatera. These might be multiplied indefinitely, but those named give the most effective groups to be met with. These are all brilliantly-coloured annuals, and their remarkable prolificacy of flower is not one of the least of the recommendations attaching to them.

DAHLIAS.—The prevailing rains are greatly helping the growth of Dahlias, but warm weather is sadly needed to give that fine development which the cultivator notes with so much approval. The soil about the plants should be kept clear of weeds, and be stirred occasionally to keep it open. The side-shoots require to be tied out to stakes as soon as they are long enough, so as to keep the centre stem as fully exposed as possible. When hot, dry weather prevails, the plants are greatly benefited by being watered overhead in the evenings through a fine-rosed watering pot.

DIANTHUS.—The annual varieties are now getting into full bloom. There is the well-known Indian Pink (Dianthus chinensis) and its double form; both are now in flower, and they contain very charming varieties, especially those having fringed edges. I have recently seen some selections from the Indian Pink with brilliant red and white flowers that had an unusual vividness of character, and which were of great value for cutting from. Then there is the pretty dwarf Dianthus Heddewigii and its fringed variety, laciniatus, both large and rich in colour. The best soil for these annual Dianthus is one of a light sandy nature. The seeds can be sown in the open ground, and the plants thinned out to a requisite distance when the seedlings are large enough to be handled.

TROPÆOLUMS.—One of the most distinct of the dwarf varieties is Carter's Ruby Queen, the colour of which is remarkably distinct and good, being of a ruby-red hue, which stands well, and the flowers are produced with remarkable freedom. Another is Lustrous, that has vivid dark crimson flowers of remarkably fine shape and freely produced; a variety named carminatum has rosy-cerise flowers, and is very effective in a mass. The best yellow is one called New Golden; this has golden-yellow flowers with maroon spots, and is very free and effective. These dwarf Tropæolums make capital bedding plants, but in order that they should be dwarf and free-blooming, a selection of two or three of the most suitable plants should be made in summer, and be increased in the autumn by means of cuttings. Plants obtained in this way rarely seed, which is of material assistance in prolonging the head of bloom. If a few cuttings be struck in autumn they can be made to furnish a number of plants in spring if placed in heat and forced into growth.

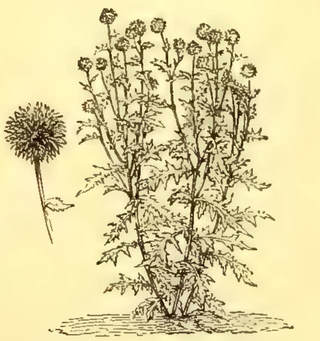
VIOLETS.—Well-established plants of Violets are now throwing out strong runners, and if a stone be placed on each so as to press them to the soil, good strong plants can soon be obtained. As soon as they have begun to root into the soil the runners should be lifted and planted out in a piece of well-prepared ground in the form of a bed, and they will yield fine flowers early in autumn and winter, if the weather be at all open and warm. The state of the weather has much to do with the production of flowers.—D.

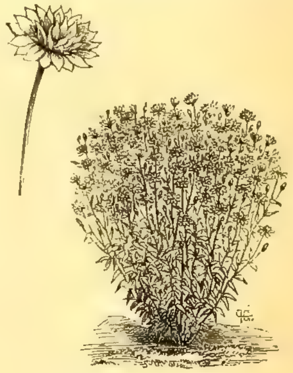
Daring Declaration of the Plan of Creation.—An assertion as daring as any with which we are painfully familiar amongst the eccentricities of the pulpit, occurs in the "Gardeners' Chronicle" for July 7, 1877. Referring to a plant of Pelargonium tricolor at Dropmore, the writer says:—"The object of the diversity in colour in the wild flower is to serve as a signpost to insects, which are by its guidance induced to visit the flower where they can best get the honey, and where at the same time their aid is most efficient in fertilizing the flower—a wonderful contrivance, the whole significance of which is lost by the average florist." We would ask, what is "the object" of the Creator in the case of a Pelargonium, the flowers of which have no "diversity in colour?" But we prefer not to tempt the man to sin again. Besides, the "average florist," who is evidently regarded by the writer as a fool, should always avoid questioning the average botanist, who is such a very superior creature.—"Gardeners' Magazine."

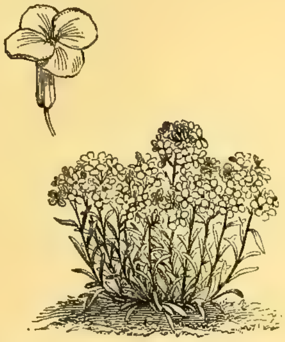
HARDY FLOWERS OF THE WEEK.

The cool weather during the past week has improved vegetation wonderfully; all plants are making a rapid growth, and many are flowering luxuriantly, some, too, of the early flowering plants are making a second growth, and will flower again later on. At the trial grounds of Mr. Barr at Tooting there is a fine display of annuals, grown with the idea of testing their respective merits; among them I noticed Leptosiphon roseus (reminding one of a strong-growing Androsace), Clarkias in every shade of colour (both single and double), Tropæolums, Collinsias, Nemophilas, and a host of other fine plants. Lilies are abundant (especially the Californian and elegans sections); the tigrinum and speciosum groups look well and promise a fine display. Oxalis lasiandra is very attractive, certainly one of the best of the genus, growing 1 ft. in height with numerous purplish rose flowers; O. lupinifolia is also very good, being distinct in both foliage and flower. Triteleia laxa and Murrayana, when better known, will be found in every garden, being hardy, easily grown, rapid of increase, and producing an abundance of Tyrian purple flowers, on stems 1 ft. in height; there is a fine companion for these, Calliprora lutea, with large heads of yellow flowers, equally showy, and well worth cultivation. Allium acuminatum is a pretty dwarf species with rosy purple flowers; and A. descendens, 3 ft. high, has close spherical heads of a deep purple colour. Many of the Japanese Irises are in flower still; Iris Kæmpferi forms a grand group of border plants, bearing flowers of every shade of colour, and of immense size, looking more like Clematises than Irises. Coreopsis tenuifolia is a pretty species with deep yellow flowers on slender stems 2 ft. high; Sisyrinchium odoratissimum is a rare species, the flowers before expansion being striped like a barber's pole, the inside of a creamy-white, and the perfume very fragrant. At Parker's, there is a good display, and I noticed many good plants, especially his new Pea, which was justly certificated last week; it is similar in every respect to the old Everlasting Pea, but with deep crimson flowers which shine out conspicuously from the other varieties near which it is planted. Cyananthus lobatus, a rare Himalayan plant, of prostrate habit, light green foliage, and large Vinca-like blossoms of a light blue, is an old plant, but one rarely met with. Omphalodes Luciliæ is a very fine plant, being 1 ft. or more across, and covered with azure blue flowers. Spigelia Marylandica with long tubular crimson green-tipped flowers on stems 1 ft. high, is one of the finest of our North American plants; and beside it I noticed (although not yet in flower) Rhexia virginica, which a month or so later will form handsome bushes covered with large rosy purple flowers: this and the preceding like a cool shady spot in peat or leaf-mould. Scolymus grandiflorus, both here and at Tottenham, forms a very attractive plant, smothered as it is with golden yellow flowers; although a Thistle, it is a good plant and will repay careful cultivation. Hypericum tomentosum, a woolly-leaved species, is very distinct and pretty, and so is the old Nierembergia rivularis, which is flowering freely in pots, its large salver-like flowers on stems 2 in. in height completely covering the pots. Many of the Campanulas are flowering freely, and form very showy masses; they are excellent edging plants. One of the most conspicuous border perennials is Lythrum roseum superbum, which, if well known, would be in great request; and if planted against a row of Acer Negundo variegatum, has a very pleasing effect, the crimson spikes standing out in bold relief against the delicate fringe of the Acer. Delphiniums are in grand condition, exhibiting every shade of blue, from the sky blue of D. formosum Belladonna to the ultramarine blue of the old D. grandiflorum. At the Hale Farm perennials are looking well, and as this class of plants is grown to a great extent the masses of some of the bright colours form a very imposing sight. Fancy a bed of 500 plants of the double scarlet Lychnis in full bloom, and every head of very double flowers 3 in. across; the double white is also in flower, but not so attractive as the scarlet. Hypericum olympicum cannot be too highly recommended, it will grow anywhere, and is without doubt one of the finest of the genus; Oxalis floribunda is another fine plant of which too much cannot be said, it would make a fine bedding plant as it is in flower for four or five months, producing during that time myriads of bright rose-coloured flowers. These perpetual-flowering perennials are invaluable, and everyone should make a point of selecting those which remain the longest in bloom; there are several other varieties with lilac, white and crimson flowers. Dianthus Atkinsi (flowers as large as a shilling of a fiery crimson colour blooming four months), is the best of the perpetual-flowering Dianthuses. Callirhoe involucrata and Modiola geranioides are two pretty Malvaceous plants, the flowers of both being large and high coloured, invaluable for the front row of the border or on rockwork; both kinds thrive in a sunny spot on sandy soil. Aquilegia Bertoloni is the only Columbine in flower, about 1 ft. in height, with deep indigo-purple blossoms and yellow anthers. Œnothera montana is a new species, with the habit of Œ. acaulis, and yellow flowers larger than Œ. macrocarpa; the latter is flowering freely. Epilobium obcordatum (the Rocky Mountain Willow Herb) is flowering more freely than usual, and is certainly a desirable plant; the flowers are large, of rosy-purple colour. Campanula cenisia, growing near, with numerous light blue flowers, is a fine companion for it. The scarlet-flowered Iceland Poppy (Papaver nudicaule miniatum) is very attractive, slender stem 18 in. high, with moderate-sized scarlet flowers; it blooms abundantly, when well established, for at least two months; the white variety is also very showy. Several of the American Phloxes—P. ovata and P. divaricata—are still very gay; both are first-class plants. Agrostemma flos-Jovis is a dwarf perennial plant, with pink flowers. Diplopappus chrysophyllus is a conspicuous shrub, stem and under surface of the foliage of a peculiar golden-yellow colour, each branch terminating with clusters of white flowers. Rosa rugosa and the white variety are flowering freely, the dark green abundant foliage forming a good background for the flowers. Silene fimbriata, many of the herbaceous Clematis, Adenophoras, Campanulas, Epilobiums, and Cimicifugas are striving their utmost to outvie their neighbours in brilliancy and number of flowers, but these are completely eclipsed by the Mexican Dahlias, which are just expanding their bright-coloured blossoms. A. P.

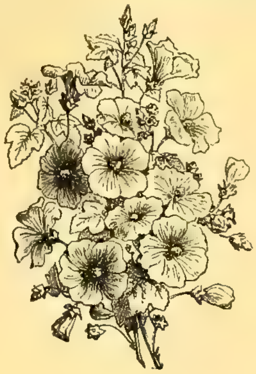
Showy Tiger Lily (Lilium tigrinum splendens).


Globe Thistle (Echinops Ritro).

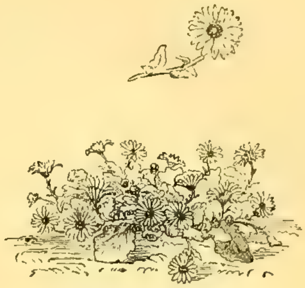

Xeranthemum annuum.



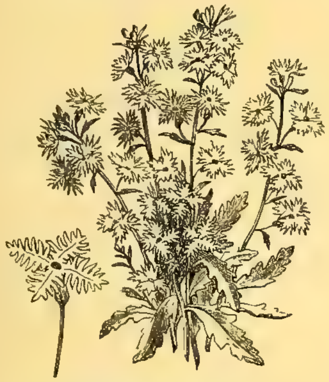
Erysimum Marshallianum.



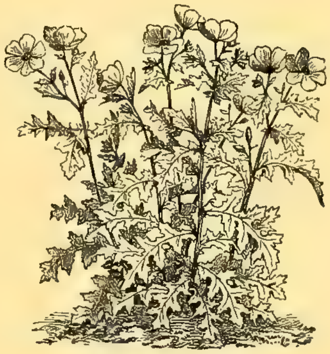
Lavatera trimestris.



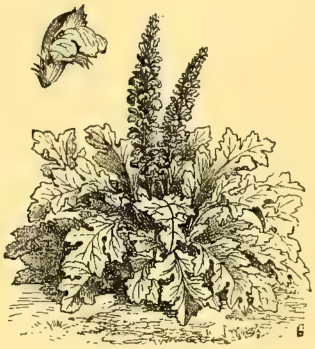
Venidium calendulaceum.



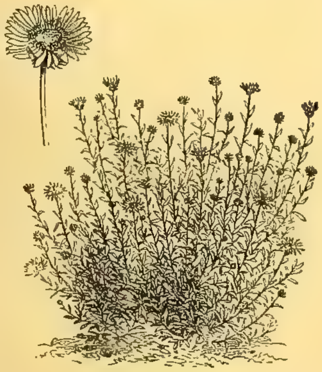
Schizopetalum Walkeri.



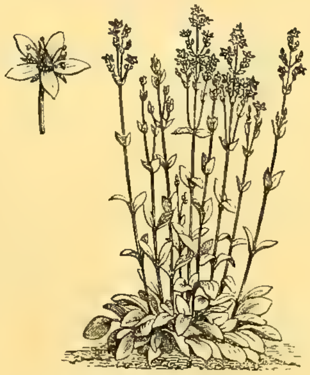
Argemone grandiflora.



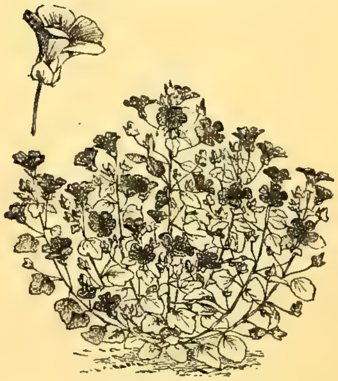
Bear's Breech (Acanthus mollis).



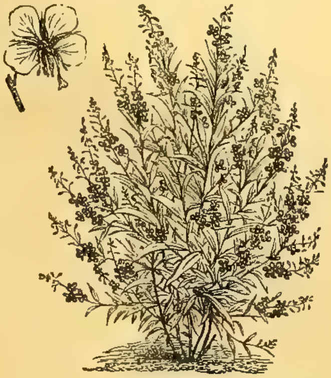
Grindelia squarrosa.



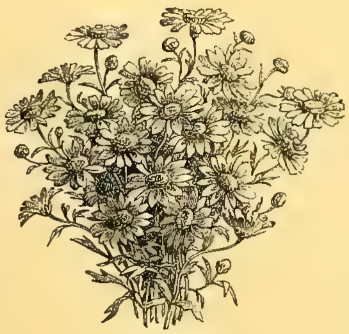
Marsh Swertia (S. perennis).



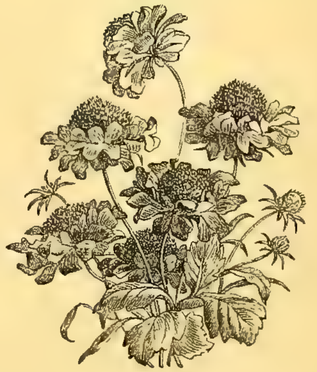
Malope trifida.



Willow Herb (Epilobium spicatum).



Shortia californica.



Purple Scabious (Scabiosa atropurpurea).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

THE FRUIT CROPS.

METROPOLITAN AND SOUTH-EASTERN DIVISION.

Middlesex.—Uxbridge District.—Apples in orchards are a failure; on trained trees a good crop; with me, Hawthornden is the best this year. Of Pears we have almost none, and what few we have are all more or less cracked and blackened by frost. Peaches and Nectarines are middling, about half a crop. Of Plums we have none in orchards, and but few on walls, on which the best is Victoria. Apricots are a partial crop. Figs good. Strawberries good in some places, in others middling; Sir Charles Napier and President are the two best with us this season. Of Gooseberries we have a good crop, and the same may be said of Raspberries and Currants. Filberts are a heavy crop everywhere, and Walnuts are also good. I may add that Potato crops look promising in and around this neighbourhood, no disease being as yet apparent.—G. BRUSH.

Royal Horticultural Gardens, Chiswick.—The state of the fruit crops in this district is very deplorable. Those who recommend so enthusiastically the great extension of fruit cultivation in this country, and talk of the immense profits to be derived therefrom, require only the experience of a few such seasons as this to teach them that fruit-growing in England is a very precarious occupation —one crop in seven being about a safe calculation. Commencing with the smaller fruits, Strawberries, Gooseberries, Currants, &c., are a full average crop and excellent in quality. Pears are very scarce; hundreds of trees—standards, dwarfs, cordons of all kinds and in all situations not bearing a single fruit. The only variety bearing a full crop is Aston Town, large standard trees of which are heavily laden. The Hessle, which is almost always to be depended upon, has about half a crop. There are also a few Jargonelles, and one vertical cordon tree of Prince Imperial on a sheltered part of a wall is yielding a very fine crop. Apples are more abundant, but far under the average, with the exception of certain varieties, such as Hawthornden, Stirling Castle, a useful sort; Small's Admirable (which is bearing a heavy crop), Lord Suffield, Cox's Orange Pippin, and some varieties of Nonpareil. Plums are an entire blank. Peaches and Nectarines on walls and in unheated houses are about one-fourth of a crop. Cherries (with the exception of Morellos) are entirely wanting. Figs, good crop. Filberts, a very heavy crop. Blossom was abundant; and the actual frost was not severe. The loss I attribute to the long-continued cold and the absence of sunshine during the flowering and setting period.—A. F. B.

Kent.—Eridge Castle, Tonbridge Wells.—Of Apricots we have none this season, and Peaches only occur where they are well sheltered. Pears on walls are good, and on standards half a crop. Apples are an excellent crop. Figs are good, and Nuts very plentiful. Currants, Raspberries, Gooseberries, and Strawberries plentiful, but the last are small. Cherries are a good crop; but of Plums we have none. We are 400 ft. above the sea, and escape to a great extent spring frosts.—J. RUST.

—— **Tunstall, near Sittingbourne.**—The Cherries in Kent have again been a short crop, and not much unlike last year as to produce: the early sorts were all more or less much cut. The sorts that stood our need best are the Bigarreau, English, and Florence: Governor Wood (a sort not much yet tried) promises to be a hardy and good cropper in an adverse season. Plums are the worst crop known for years. Pears again a bad crop, the commoner sorts having the advantage. Apples are diversified: at places a fair crop, others only a sprinkling. I doubt if there be half a crop anywhere. In sheltered places Cobnuts will be plentiful, and Walnuts are a very fair crop. Gooseberries have been fine, and a fair although not a heavy crop. Black Currants a moderate crop at most places, but they do not grow out much. Red Currants are better. On walls the crop of Peaches, Nectarines, &c., is probably the worst known for years. The trees also are much injured from the cold spring. Figs promise to be an abundant and good crop.—G. W.

—— **Wierton, Maidstone.**—In the garden here we have a fair crop of Peaches and Nectarines. Plums are a light crop; the best are Prince of Wales and Diamond. Cherries are not a full crop. Figs are a heavier crop than I have seen for some years past. Apples are a light crop, the best being King of Pippins, Ribston Pippin, Cellini, Margil, and Winter Hawthornden. Strawberries are not a full crop, as much of the bloom was imperfect and small. Raspberries are a fine crop. Gooseberries of most kinds are a heavy crop, and the same may be said of Currants of all kinds. Pears are a very light crop, with the exception of Knight's Monarch, which always bears well. In orchards and fruit plantations the Apple crop is equally light as in gardens. The best croppers are King of Pippins, Ribston Pippin, Graham's Pile Russet (a good keeping, useful variety), and Stone's Apple, a kind not so well known as it deserves to be, as it always bears well, and is a large kitchen Apple, fit for use as soon as it is large enough to gather; it is a good market Apple, and one which keeps sound till Christmas. It was raised by a farmer named Stone in this neighbourhood. Common Pears are plentiful. Cherries have produced a better crop than was expected, the kinds being Bigarreau, Kentish, and Flemish. Gooseberries are a heavy crop and fine; these receive high cultivation which answers well, as some growers produce from 2000 to 3000 bushels in one season. Currants of all kinds are a heavy crop; comparing Lee's Prolific Black the other day with Black Naples I could see no difference between the two; they are in all respects alike. Nuts are a good crop, Cobs being the principal sort; there are still a few Filberts, but these are not so much grown as in former years; they do not succeed so well under trees as in an open situation.—W. DIVERS.

Surrey.—Combe Lane, Kingston-on-Thames.—Apples on orchard trees throughout this neighbourhood are a fair crop, but on pruned trees in gardens there are but few. Apricots are a total failure both on walls and in orchard-houses. Cherries are a thin crop, but of some sorts, such as Florence and Morello, there is a fair supply. Currants, both Red and White, are a very heavy crop, while Black Currants are rather light. Gooseberries are a good crop, and the same may be said of Mulberries. Of Pears, there are none on standards, and they are very thin generally, in some places none at all, even on walls; in pots they are no better, although they had the benefit of artificial protection. Peaches are a thin crop, in most places none at all, and the trees are only just getting over the effects of the late cold spring. Of Plums we have none whatever, either on standards or on walls. Raspberries are a fair crop. Strawberries a heavy and good crop. Figs plentiful where loosely trained on walls. Filberts are an exceedingly heavy crop. Walnuts are a good crop in some places.—WILLIAM DENNING.

Sussex.—Petworth Park.—Apples are an average crop; in some orchards plentiful. Pears very thin. Plums quite a failure, with the exception of Damsons, of which there are a few. Cherries are a fair crop in some places, none on many trees; the late rains have so spoiled the greater part that they have not been gathered, especially Bigarreaus. Apricots are a failure, except under glass copings. Peaches and Nectarines are the same. Figs promise an abundant crop; also Mulberries, Quinces, and Medlars. Nuts and Filberts are everywhere plentiful. Outdoor Grapes look very promising for a heavy crop. Strawberries were plentiful for a short time only, on account of the hot, dry weather then experienced; I have, however, plenty yet on young plants that were well watered; in five weeks only ¼ in. of rain fell, while during the past few days we have had over 3 in. Gooseberries and Currants—Black, White, and Red—are abundant. Raspberries are poor in some places, but abundant and fine in a few gardens. Apples, Pears, Cherries, and most kinds of other good fruits grown in this locality are excellent, and they consist of many good old varieties.—GEORGE BREESE.

Hampshire.—Heckfield, Winchfield.—There was as bright a promise for a good fruit harvest at blossoming time as I ever remember to have seen, and certainly I have never known a more complete failure of fruit crops generally than we have this year, the sharp frost which occurred during the month of May being almost the sole cause of their failure. Peaches and Nectarines, though well protected, did not open their blossoms kindly; I therefore think the wet autumn and consequent immature state of the wood had something to do with their failure, which is quite complete. Apples hereabouts are half a crop; the following kinds are fruiting freely, viz., Keswick Codlin, Golden Noble, Blenheim Pippin, Deux Ans, Lord Suffield, Nelson's Glory, and Hawthornden. Apricots are about a third of a crop, Moor Park being the best. Cherries (Morellos), a full crop; others very scarce. Pears are a good crop on walls of all aspects, but on standards and pyramids there are none. Of the following we have heavy crops on walls:—Hacon's Incomparable, Seckle, Marie Louise, Beurré Rance, Passe Colmar, Easter Beurré, Beurré Diel, Louise Bonne of Jersey, Beurré de Capiaumont, and Williams' Bon Chrétien. Plums are very scarce generally; the following kinds on a west wall are, however good, viz., Purple Gage, Belgian Purple, Pond's Seedling, and Magnum Bonum. All small fruits are abundant, and remarkably free from blight or aphides. Strawberries have been extra good. The following are our best kinds:—President, Vicomtesse Héricart de Thury, La Grosse Sucrée, Sir Charles Napier, and Frogmore Late Pine. Potatoes are as yet free from disease.—W. WILDSMITH.

Berkshire.—Royal Gardens, Frogmore.—Although we had 10° of frost on the morning of the 5th of May, that was not alone the cause of failure as regards many kinds of fruit, as at that time the trees were well protected with foliage. The loss of the crop of stone fruit, such as that of Apricots, Peaches, and Plums, must be attributed to a continuation of cold, sunless weather after the fruit was set. Apples in this locality are generally below the average; Rosemary Russet, Pomona, Frogmore Prolific, and Blenheim are, however, carrying heavy crops. Pears on walls are very thin and on standards are a partial failure. Plums are a total failure. Peaches and Apricots very thin, Nuts plentiful, and Walnuts thin, with the exception of a few places where there is a good crop. Gooseberries, Currants, and Raspberries are good average crops. Strawberries were late but plentiful, and of fair quality; the best were Fairy Queen, Cockscomb, Mr. Radclyffe, La Grosse Sucrée, Sir J. Paxton, J. Powell, and Aromatic.—J. Powell.

—— **Welford Park, Newbury.**—Apricots, Peaches, Nectarines, and Plums, including Damsons, are an entire failure here this year. Of Cherries we have an average crop of May Duke and Elton; other sorts are very scarce; Morellos set an average crop, but fully half of them have dropped off. Figs are good, and look well at present. We have but few Pears: the best are Beurré Rance, Passe Colmar, and Glou Morceau, all on walls. Of Apples we have an average crop on Northern Greening, Keswick Codlin, Eclinville Seedling, Broad-eyed Pippin, and Cox's Orange Pippin; and nearly an average of Alfriston, Blenheim Orange, Cellini, Cockle Pippin, Dutch Codlin, Summer Golden Pippin, Waltham Abbey Seedling, Mannington's Pearmain, and Cornish Aromatic. The Northern Greening has only failed once in eighteen years; it is by far the most useful culinary variety which we possess, being in use from the beginning of October till the middle of June. Strawberries are an average crop. Red and White Currants a full average. Black Currants under an average, but very fine in quality. Raspberries about an average.—Charles Ross.

—— **Cottage Farm, Sulhampstead.**—I possess some forty varieties of the Plum tribe, and one half-pint of fruit is the fullest measure of my crop, and this is the usual complement hereabouts. Of Pears we have none upon open standards, but upon walls a fair crop is proffered. I have some two acres of orcharding, and it is said that I am better off for Apples than most people; I have a good half crop, and the limit in this neighbourhood will not reach to half a crop, as by far the majority of the trees that have come within my ken are without fruit. A dozen fair-sized Walnut trees will produce me about a bushel, and Walnuts are a meagre crop generally; but of Filberts, Cob, and common Nuts, the yield is quite an average one. Cherries are scarcely anywhere to be seen. Strawberries may be considered a good crop, and Gooseberries, Currants, and Raspberries are abundant. Odds and ends, such as Figs, Mulberries, and Grapes upon open walls, promise well. Peaches, Apricots, and Nectarines are a complete failure.—Robert Fenn.

—— **Bearwood.**—Peaches and Nectarines are a very thin crop in this neighbourhood, the trees having suffered greatly during the trying winter and spring months. Peach blister has never been so bad as it is this year, and mildew following has made sad havoc with the trees. The same remarks apply to Apricots, many trees of which are killed. Of Plums we have none on walls or standards. Pears on walls are a very fair crop, but on standards they are thin. Apples are a fair average crop, and Cherries on walls are good. Filberts too are fine. Of Strawberries many were killed through the winter; the recent rains have, however, much improved the crop, which is a fair average one. Bush fruits are very good, I may add that our Potato crops are all that can be wished for; early sorts have been good, and later kinds are very promising, and quite free from disease, although I hear of its being in the vicinity.—James Tegg.

SOUTH MIDLAND DIVISION.

Huntingdonshire.—Ramsey Abbey.—I do not remember to have seen Pears and Plums so complete a failure as they are this year, and the same may almost be said of Apricots. Peaches are better; in fact, Royal George, Grosse Mignonne, and one or two others are carrying good crops. Apples generally are thin. Cherries, with the exception of Morellos, are a failure. Figs are heavily laden, especially the Brown Turkey. We have an abundant crop of Currants, Gooseberries, and Raspberries, and the fruit is very fine, although later in ripening than usual. Strawberries are hardly so good, and are much later than in ordinary seasons. Open-air Grapes are very late, and unless the autumn be fine and warm they will not ripen. Nuts of all kinds are thin; indeed, in some places there are scarcely any. In my opinion, the main cause of the failure of the fruit crops this season may be traced to the short but sharp period of drought last summer, followed as it was by an exceptionally wet autumn. The heat and drought arrested the growth prematurely, whilst the damp, sunless autumn caused unusual activity too late in the season, and, as a consequence, bloom, though plentiful, was weak and imperfect. No doubt if the spring had been genial some fruit would have set, but I do not think under any circumstance, with the wood in such an immature condition, that a good crop would have been gathered.—E. Hobday.

Buckinghamshire.—Wycombe Abbey.—Apples are abundant here and in some other places in this locality. Of Apricots we have but few. Cherries are about a fourth of a crop. Of Peaches and Nectarines we have scarcely any. Of Plums we have none here, a few exceptions elsewhere. Pears are not a fourth of a crop. Currants both kinds plentiful and good. Raspberries a good crop. Gooseberries an average crop. Strawberries very good, but late. Nuts plentiful. Walnuts a very light crop. Taken as a whole fruit crops in this vicinity will fall much below an ordinary average, and as regards Plums, Peaches, Nectarines, Pears, and Apricots, they may be considered to be almost a total failure, a circumstance chiefly attributable to the effect of the severe frosts in the early part of May. Apart from this cause, however, it is questionable as to whether the Pear crop would have been otherwise, owing to the superabundant quantity of blossom there was on the trees, a circumstance which oftentimes results quite contrary to what is anticipated.—Geo. Thos. Miles.

Northamptonshire.—Castle Ashby.—Fruit crops in this neighbourhood are, with few exceptions, very inferior, all having been destroyed by the late spring frost, which in some cases not only destroyed the fruit-bloom, but seriously injured the trees; although well covered, in many instances it totally killed the young growth, and in some cases the two and three-year wood of the Plum and Apricot trees; the same applies to the Walnut, Chestnut, and many other early-growing trees. All promised well for a good and plentiful fruit season until the spring frost did its work of destruction. Of Apricots we have none; Apples, very few; Pears, Cherries, and Plums, none; Peaches and Nectarines, a few; of Strawberries we have abundance, and very fine; Red Currants in every way excellent; Black Currants half a crop, but fine in quality; Gooseberries, a medium crop; Raspberries, a few; all kinds of Hazel Nuts plentiful, but of Walnuts we have only a few.—George Beech.

Oxon.—Blenheim Park.—I have little to report on the state of our fruit crops beyond disasters, and these, too, of a severe character. Apricots, covered and uncovered alike, are quite a failure; the severe frosts of May 4, 5, and 6 (9°, 11°, and 8° respectively), quite shrivelled up such as escaped the 14° and 16° of Feb. 28 and March 1, when they were in full flower. Where the trees have not died back they are now making a quantity of soft, watery wood, which in the natural course of things will be difficult to ripen; hence there is not a very promising prospect for next season, and this, too, in the very home of the Apricot. The failure in question is a serious loss to the cottagers, who often are enabled to pay their yearly rent from the products of their Apricot trees alone. Apples are about half a crop, such kinds as Hawthornden, Keswick and other Codlins, Stirling Castle, Blenheim Pippin, King of Pippins, and Dumelow's Seedling being about the best. Cherries are scarce; black and green fly have been most troublesome, seeming quite to disregard the usual remedies, with the season so evidently in their favour. Pears and Plums are very thin, although the trees presented perfect sheets of bloom. Nuts, both Filberts and Cobs, are a heavy crop. Strawberries have been abundant and of good quality; President, Sir Joseph Paxton, and Sir Charles Napier being found good trustworthy sorts. Raspberries and Gooseberries are a fair crop, especially the former. Currants, both Black and Red, are also a fair crop, and excellent in quality.—W. Crump.

WEST MIDLAND DIVISION.

Gloucestershire.—Ashton Court, Bristol.—In this locality the Apple crop is much under the average, and a very partial one; in the cider orchards there will, however, be fair crops on late flowering kinds. In gardens the following are good exceptions to the general failure:—Hawthornden, Alfriston, Cellini, Keddleston Pippin, Lord Burghley, Dutch Mignonne, and Boston Russet. The continued east winds in April and May, combined with occasional sharp frosts, completely destroyed the Pear bloom, consequently, that crop may be set down as almost a complete failure, a remark that applies in fact to all stone fruits. Strawberries have been a good crop, the best being Keen's Seedling, Black Prince, Sir Charles Napier, President, John Powell, Amateur, and Eleanor. Of bush fruits, all are good with the exception of Raspberries. Figs, Medlars, and Mulberries promise to be good average crops. Common Nuts in the woods are very plentiful. Walnuts are about an average. Fruit trees and vegetation generally have been much benefited by the late rains, and are making rapid growth. I may add that the Potato crop promises to be a good one; up to the present time I have seen no symptoms of disease, and the haulm is particularly strong and healthy.—John Austen.

Herefordshire.—Stoke Edith Park.—Of Apricots we have a tolerably good crop, and the trees, which for some time looked very disconsolate, have begun to grow strongly, so much so that I have given them a good summer pruning (leaving less for winter pruning, much of which in the case of the Apricot is a mistake). I have had a great number of fruits fall, even after stoning, a circumstance that never occurred with me before, and which I presume to be the result of the non-ripening of the wood last autumn, and the arrest of the sap in this immature wood, owing to the frosts which occurred in May; I cover with Brittain's garden netting, and it is of great benefit to the Apricot while setting its fruit to give a good soaking of water at the root, mulching immediately afterwards with good stable litter 1 ft. deep. Peaches are nearly a total failure, but I shall be able to ripen some few—perhaps 200; I have never known Peach blister to be so bad as it is this season; there is no remedy for it but stripping off the affected leaves and burning them, afterwards washing the trees well with a good engine, and giving a good soaking of water at the roots; the soil, too, should be broken up to aerate the border, thus getting the trees into active growth. Royal George, Belle Bauce, Noblesse, and Prince of Wales, are the sorts on which I have fruit; the show of bloom was very fine upon all the trees, which were as well covered as the Apricots. Plums—standards, pyramids, and wall trees—are a total failure; I took pains to have Green Gages on walls covered with double 1-in. mesh netting, but it proved useless. Of Damsons we have none. Pears are nearly a total failure, all the earliest-flowering sorts are quite gone; the frost on May 5 destroyed the embryo fruit; on that morning we registered 10°, and then we had a succession of starving east winds. The sorts of Pears which I have been able to save are Joséphine de Malines, Beurré Diel, Leon Le Clerc (Van Mons), all on a south wall. Apples are almost a failure; I would recommend Lord Suffield and Stirling Castle as two of the best Apples—they never fail; and I find that Northern Greening, Warner's King, and Tower of Glamis (in culinary Apples), have been able to resist the general destruction. In our neighbourhood we have a local Apple named Seek-no-Further, which originated in these gardens, and I hear that it is carrying very good crops. Early cider and perry fruits are not good, but late cider fruit will be an average crop. Of Cherries I have had a very fine crop of the Kentish preserving kind, and I have also an average crop of Morellos, both on a north wall and on bushes—bushes or pyramids should be more extensively used for general culture; May Dukes I do not yet grow; Governor Wood is very good on a north wall, and so is Royal Duke or Late Duke, but on espaliers it has failed. Figs promise to be a good crop if we have warm weather to ripen it. Raspberries are very good and the fruit fine, and I have a good show of the Perpetual or autumn-fruiting Raspberry, which always succeeds well here, and comes in usefully for Currant tarts and dessert. Currants, both Red and White, are a good average crop of good fruit, and Black Currants are also very fine. Gooseberries are a good average crop. Strawberries have been good and plentiful; nothing is so helpful to them as a good soaking of water at the roots when the fruit is setting. For our soil and situation Sir Joseph Paxton is the best; Marguerite, second; Oxonian, third. I have tried all others, but these do well in all seasons. Keen's Seedling also succeeds with us; it is the only sort used here for preserving; I do not use it for dessert. Sir J. Paxton and the other two are good travellers, bearing a long journey without injury.—W. Ward.

Shrewsbury.—Downton Castle, Ludlow.—Of Peaches, Nectarines, Apricots, early Pears, Plums, and dessert Cherries we have not more than one-fourth of a crop. The bloom was all that could be desired, but owing to late frosts and north-east winds fruit trees of most kinds have proved a failure. Of early sorts of Apples we have about half a crop, and of very late kinds, such as Bittersweets or cider fruit, a fair crop. Blenheim Orange and King of the Pippins are the varieties most grown in this district. Of Morello Cherries I have a good crop; Red, White, and Black Currants a fine crop; and of Strawberries, Gooseberries, Raspberries, and Mulberries the same may be said. Nuts, both Filberts and Walnuts, are good.—Wm. Landon.

Staffordshire.—Drayton Manor, Tamworth.—Fruit in this district is almost a total failure. Pears on pyramids and bushes are an entire failure; on espaliers they are little better, and on walls about a quarter of a crop. Glou Morceau, Beurré Rance, Ne Plus Meuris, and Bishop's Thumb are the best. Apples are but a sorry crop, especially dessert varieties; of these the best are Ribston Pippin and Blenheim Orange. Kitchen varieties are rather better, but still these are much under average. The different kinds of Codlin and Northern Greening are the best. Plums and Damsons are an entire failure. Apricots are under average, and the same may be said of Cherries and Black Currants. Strawberries are a good crop; my best varieties are President, Sir Charles Napier, and Vicomtesse Héricart de Thury. Raspberries are a good crop, as are also Gooseberries, and Red and White Currants. The failure of the Pear, Plum, and Damson crops I attribute entirely to the severe frosts which we had on May 4, 5, and 6, when we had 13°, 15°, and 12° respectively. Previously we had a splendid show of healthy blossom, which could not have failed to have produced a good crop. I attribute the failure of our Apple crop to very high winds which prevailed during the week ending May 27. They were so high with us that they blew the blossom off in showers before it had time to set. The weather was also very dry and cold during that week, no rain having fallen, and the wind being east and north-east.—Owen Thomas.

Worcestershire.—Impney Hall, Droitwich.—Fruit crops are generally thin in this district, and many of the trees (stone fruits especially) have suffered severely from biting, easterly winds, which continued several weeks in April and May, accompanied by hail and cold rains. Apples are not plentiful, except the common kinds used for cider, which seldom fail, and for that reason they are allowed to form boundaries of fields and to grow by the sides of lanes and bye-roads, with little attention except at the period of fruit gathering. Orange Pearmain, Cellini, Peach Apple, Brown Russet, and Blenheim Orange, are bearing full crops. Apricots are thin in this district, though in many cases they set well and were promising in the early part of the season. Cherries are a fair crop, but the trees have been much infested with black aphis. Currants and Gooseberries of all kinds are abundant and good; young trees planted here last season are loaded; some old bushes lifted from an old garden and planted in new ground last January are also bearing fine crops. Figs on open walls, which promised well, have cast much of their fruit since the copious rains which we have had have fallen. Filberts are a fair crop. Peaches and Nectarines are scarce on open walls, and at every place which I have visited blister and insects have been very destructive. The trees planted here last season are generally healthy and have made good growth, but they suffered severely in May from blistering; those under glass, which were planted from pots last August and received no fire-heat, set a fine crop, and no blistering is to be seen among them. Plums are a small crop, except the common kinds, but all have suffered from green aphis. Pears are thin, except in sheltered positions. Raspberries are a fair crop, but generally small and late. Strawberries are plentiful; British Queen and Elton are excellent.—M. Temple.

—— **Madresfield Court.**—Apples of all the best kinds are more or less a failure in this district; but cider fruits, owing to their being generally later, are somewhat better, and some kinds in sheltered situations are tolerably well fruited; among dessert Apples the hardiest are Blenheim Pippin and Sturmer Pippin. Of culinary kinds Lord Suffield, Hawthornden, Golden Spice, and the old but not-to-be-despised Keswick Codlin, are the most certain croppers; of these Lord Suffield is a never-failing variety, and one which should be extensively grown. Apricots set well and promised an abundant crop, but owing to the severe check experienced by the ascending sap, most of them dropped when commencing the process of stoning. Pears also are very thin, except on well-sheltered walls; here, on west walls, we have a fair crop, but on bushes and pyramids they are a complete failure. Peaches and Nectarines are good here, but in many other places there are none, and the trees are very unhealthy, so much so that extensive plantations of young trees must be made next season. Plums are all but a total failure both on walls and standards; Black Diamond and Rivers' Early Prolific are the only kinds that are producing any fruit here. Early Cherries are very poor, and Morellos not more than one-fourth of a crop; many of the trees are in a dying state. Bush fruits are a moderate crop, with the exception of Currants, which are fine, clean, and good. Nuts are a fair average crop; Coppice Nuts abundant. Walnuts very partial, but a crop on trees in sheltered situations.—William Cox.

—— **Witley Court.**—Fruit crops in this district, as far as Apples, Pears, Plums, and Cherries are concerned, are almost a total failure, and what few fruits have escaped are inferior in quality, owing to the cold, sunless, ungenial weather which has characterised the whole season. There are, it is true, isolated instances where moderate crops of Apples are to be seen, but these are very exceptional, and pointing out particular sorts which have escaped would be somewhat invidious, as upon both early and late-blooming varieties may be seen a few fruits, thus showing that not only have the early varieties suffered, but that late cider sorts have also succumbed, dropping their fruits in the embryo state. Pears are quite a failure, both as regards orchards and walls. Of Plums we have none, a statement which also includes Damsons. Cherries are also very scarce and poor in quality, with the exception of the Kentish and Morello kinds, which carry full average crops. Apricots are a scanty crop. Peaches and Nectarines are carrying full average crops, and the trees are healthy; the varieties which showed early in the season derangement of the tissue from excessive cold were Noblesse, Walburton, and Stirling Castle Peaches, and Victoria Nectarines. Strawberries have produced abundantly upon an adhesive soil; the most serviceable have been Keen's Seedling, President (still one of the best), Vicomtesse Hericart de Thury (a fine, free-cropping variety, producing moderate-sized fruit with a brisk sub-acid flavour), Sir Joseph Paxton (a sort which produces fine, large, well-coloured fruit in abundance, but which at best is but moderate in quality), and Lucas (a very finely-flavoured variety, but one which does not crop so abundantly as some upon this soil); to these may be added The Queen and Dr. Hogg, which still maintain their pre-eminence as regards quality. Of Raspberries we have famous crops of good quality; Antwerp and Prince of Wales are fine kinds for general culture. Gooseberries and White and Red Currants are abundant. Thus it will be seen that whilst we have lost our tree fruits we have an abundant supply of bush fruits, which may be accounted for by their being more sheltered from the long continuation of cold, cutting winds and low temperature which prevailed throughout the spring. Nuts are profusely cropped. I may add that Potatoes are healthy, and so far quite free from disease.—G. Westland.

—— **Westwood Park, Droitwich.**—Standing in the grand old Deer Park here and looking over the village of Hadley this spring, when acre after acre of healthy fruit trees were in bloom, was a sight never to be forgotten; but the result is a very small quantity of fruit. Of Plums, including Damsons, there are none, though scores of acres are planted with them. Bush fruit has been a good crop. Apples, with few exceptions, may be said to be a failure; one grower, however, a few miles off, who has some old Blenheim Pippin trees that bore nothing last year estimates his crop at 100 pots of five pecks each; no doubt owing to the trees having no fruit the wood got better ripened than that of those that bore a crop, and they were better able to stand the piercing east winds that prevailed here throughout May; the Blenheim is a great favourite, and makes more than any Apple that goes to market here; another favourite here is Knott's Kernel, a streaked good culinary kind and an immense cropper; Prince's Pippin is a great favourite for market and a handsome dessert kind; several with local names are largely grown in this neighbourhood. In the gardens here Strawberries have been most abundant; in fact we have good crops now of Elton, and on a north border, of Carolina Superba. Currants are a fine crop, Red, White, or Black—good clean fruit. Of Gooseberries we have a full crop. Of Cherries, except Morellos, which are a good crop, we have none; and the same may be said of Damsons and other Plums. Of Pears on walls there are a few on most varieties; Jargonelles on a south wall are a full crop. Of Apples we have very few—the trees here were loaded last year. We have two large pyramids of Cellini, on which there is a fine crop; it is a good Apple for cooking, coming in early and keeping till Christmas, and it is also fine for dessert. I have grown this as a standard, pyramid, bush and espalier in three counties, Hereford, Worcester, and Stafford, on light medium and stiff soils, and never knew it to fail. In a plantation consisting of some thousands of fruit trees, the only Apples bearing anything like a tenth of a crop are Lord Suffield and Keswick Codlin; these are much grown, but they are comparatively a failure this year. We have one large bush of old Hawthornden bearing a full crop. The new Worcestershire Pearmain will be much grown, as it is a good bearer and one of the handsomest of all Apples; on Stirling Castle and Normanton Wonder we have also a few fruit. Of Apricots we have none, except a few from late blooms under Parham's glass coping. As regards Peaches and Nectarines, not only have the east winds killed all the fruit, but they have also killed the young wood; it will be two years before the trees will be as good as they were this time last year. Three trees under glass coping have a few fruit on them, and they are making good wood for next season. Much disappointment is experienced in this uncertain climate in the case of Peach trees on open walls; every two or three years just as the trees have got some bearing wood, comes such a season as the present, and the crop is destroyed and the trees often injured so much that it ends in death! If people would only erect inexpensive houses and put into them a flow and return pipe, the trees would be saved and a crop secured every year. In this way as many fruit would be produced in a 50 ft. house as on 300 ft. of wall, taking, say, ten years successively.—John Gough.

NORTH MIDLAND DIVISION.

Nottinghamshire.—Welbeck, Worksop.—I have never before observed such a general failure in the fruit crops in this district as is apparent this year—Pears, Plums, Cherries, and Apples have all failed alike, only a few varieties of each sort showing a scattering of fruit. There was abundance of blossom, but the cold north-east winds, and the frosty nights and mornings in April and May must have done great injury to the setting of the fruit. There must, too, have been another cause of failure, for the Apples flowered very late, and after the frosts in May, nevertheless a great part of the young fruit when set dropped off. There is little doubt that the abnormal state of the weather in the winter and spring months was one of the causes of the failure of the fruit crops this year. In January and February there were such heavy rainfalls with a mild temperature that fruit trees commenced to swell their buds, but afterwards received a great check in the spring months from cold north east winds and frosts. The only varieties of Apples here bearing a middling crop are the Oldenburgh, Manks Codlin, and Irish Peach: amongst late sorts the Alfriston and Sturmer Pippin seem to have set best. Of Cherries the only variety that is furnished with a crop is the Morello on the walls. The Pears trained on a trellis here have never failed before in bearing well, but this year there is only a scattering of fruit on Williams' Bon Chrétien, Louise Bonne, and Catillac. Small hardy bush fruits such as Gooseberries, Red and Black Currants, and Raspberries are bearing abundant crops. Strawberries are likewise showing good crops, Vicomtesse Héricart de Thury being the earliest and best for all purposes; of the largest and best-flavoured varieties British Queen is still the best on the strong soil in the kitchen garden here, and President Lucas, James Veitch, and the new sort called Premier are all excellent and bearing good crops.—William Tillery.

—— **Chilwell.**—Apricots here are a failure; the only trees bearing any fruit are a few in very warm and sheltered situations; these came into flower early, and their blooms experienced from 12° to 15° of frost for three successive nights; the air was dry at the time: still we thought it impossible they could survive so much cold; all the later blooms are a total failure. Peaches and Nectarines are also a failure on walls, but in houses we have a fair crop of fine fruit. Of Apples we have just a sprinkling, some trees being quite bare; there was a splendid show of bloom, but the continuous cold easterly winds, aided by the excessive wet of last winter, which on our clayey subsoil seemed to starve the roots of the trees, made it all drop off: the only sorts that may be called a crop are Barton (a free bearer), Pike's Pearmain, and Russian or Duchess of Oldenburg; these are very general croppers and rarely fail, whereas many other first-class varieties fruit but once in two, three, or even five years; of these last may be named Old Bess Pool, &c.: I am, of course, speaking of old standard trees, I know that young pyramids will produce a few fruits more frequently. Pears are a failure in orchards and also on walls; the only sort which seems to have retained a little fruit is Glou Morceau on the wall. Plums, including Damsons, are a total failure; Cherries are the same, with the exception of a few Morellos on the walls. Strawberries are a wonderful crop, but owing to the weather they do not possess much flavour. Raspberries are a good crop. Currants and Gooseberries a fair crop. Nuts are a failure.—Alfred H. Pearson.

—— **Thoresby Park, Ollerton.**—Of Apricots we have very few. Apples none. Currants, both Red and White, a plentiful crop, but Black kinds are scarce. Of Filberts we have none. Gooseberries are a good crop. Of Pears we have a few, but of Plums none. Cherries on some trees are about half a crop. Raspberries are good. Strawberries a heavy and fine crop. Small fruits in general are a fair crop in this neighbourhood. Apricots, Pears, and Plums had to contend with 10° and 12° of frost for several nights, which destroyed the bloom, and many branches have also died off since. Apples were not exposed to frost, but such dry, parching, east winds made the bloom look as if it had passed through a fire. Even this morning (July 19) the tips of young Bracken in exposed places of the Park are black through frost.—A. Henderson.

Leicestershire.—Coleorton Hall, Ashby-de-la-Zouch.—Of Apricots we have scarcely any. Apples about half a crop. Cherries, very few indeed. Of Nectarines, on some trees there is a good crop, but few on others; and the same may be said of Peaches. Pears are nearly a complete failure—next to none. All sorts of Plums are a failure. Strawberries of all kinds are an abundant crop; Nuts, too, are a good crop. Gooseberries were injured by frost, but, nevertheless, they are a good half crop. Raspberries and Currants are a heavy crop, and Figs are a very good crop.—Montgomery Henderson.

Lincolnshire.—Aswarby Park.—Of Apples we have half a crop; Apricots, a few; Currants, all three varieties, a good full crop; Figs (outside), a heavy crop, and the fruit promises to be large and good; Gooseberries, a heavy crop—the best varieties here being Whitesmith, Warrington, and Scotch Red. Of Pears, we have a few—our best this season are Napoleon, Brown Beurré, Beurré Bosc, Althorp Crasanne, Winter Nelis, and Ne Plus Meuris. Plums are a failure—a remark which also applies to Peaches and Nectarines, and many of the trees are so injured that they will not recover. Strawberries are a full crop: our best varieties are Keen's Seedling, President, British Queen, and Sir Joseph Paxton. Walnuts are a good crop. I may add that the Potato disease has made its appearance here.—Richard Nisbet.

Derby.—Osmaston Manor.—Of Apples, Apricots, and Plums we have about half a crop; Damsons and Medlars, none; Pears, a good crop; Gooseberries, half a crop; Red and Black Currants, good; Walnuts, half a crop; Filberts, none; Peaches, Nectarines, and Figs (indoors), good crops—none grown outside; Strawberries, Raspberries, and Cherries are good crops.—J. Booth.

Rutlandshire.—Barleythorpe Gardens.—Plums with us are a failure; the kinds that do well here are Victoria Green Gage and Washington. Peaches and Nectarines are also failures; the best sorts of Peaches are Royal George, Prince of Wales, and Early York; and of Nectarines, Violette Hâtive. Figs are a good crop. Apricots on trees well sheltered are a fair crop; the best are the Moor Park and Blenheim. Cherries generally, with the exception of Morellos, are a failure, though in some instances they are very good; the kinds that do best here are, as a rule, the May Duke and Morello. Of Pears we have very few indeed; the varieties that do well with us are Marie Louise, Louise Bonne of Jersey, Winter Nelis, Williams' Bon Chrétien, Beurré Diel, and Beurré Bosc. Apples are very scarce; the sorts that succeed best here generally are Normanton Wonder, Lord Suffield, Blenheim Orange, King of Pippins, and Margil. Strawberries are a fair crop but small. Raspberries an average crop. Red Currants a fair crop, but Black kinds are scarce in some places near here. Gooseberries are below the average. Filberts are a failure. It was the cold east winds which prevailed during April and May, accompanied by storms of hail, that destroyed the fruit crops, which at that time promised to be unusually good.—F. Clarke.

SOUTH-WESTERN DIVISION.

Dorsetshire.—Sherborne.—Fruit crops are worse in this neighbourhood this season than they have been for the last twenty years. Apples bloomed and set well, but they are now much blighted, and I fear there will not be more than half a crop. Apricots are a complete failure, and the trees are in a very bad state, many of them having lost half their branches. Morello Cherries may be set down at about two-thirds of a crop; other varieties do not succeed here. Currants—Red, White, and Black—are plentiful. Figs will be a moderate crop. Gooseberries are abundant. Medlars, poor. Peaches and Nectarines on open walls are a failure, and the trees are nearly ruined, having suffered severely from blister, and what growth they make will be so late that I fear it will not ripen properly. Those who happen to have their Peach walls covered with glass will have a good sprinkling of fruit. We have a moderate crop of the following sorts of Pears—viz., Gansel's Bergamot, Beurré Diel, Ramilies, Délices d'Hardenpont, Flemish Beauty, Glou Morceau, Jargonelle, Joséphine de Malines, Marie Louise, Ne Plus Meuris, Passe Colmar, Huyshe's Victoria, and Van Mons Leon Leclerc. Plums of all kinds are very scarce. Strawberries have not been more than half a crop, and very small; our best have been Keen's Seedling. Walnuts appear to be plentiful in some places; Filberts and Cobnuts but a very moderate crop.—W. G. Pragnell.

—— **Moreton.**—The fruit crop in this vicinity is far from satisfactory, although the prospects early in the season were promising; all kinds of fruit trees bloomed abundantly, and were a fortnight later than usual in flowering, but unfortunately cold winds and frost were very destructive even at that late period. We have here a good sprinkling of Apples, particularly of the Blenheim Orange, which is altogether the most satisfactory variety we have: in some gardens the Apple crop is very thin indeed. Pears are a poor crop; some trees on wall are bearing tolerably well, but trees in open quarters are a complete failure. Plums, too, are a failure. Cherries are a fair crop in some places; in others none except Morellos, which are good in most places. Figs are good, particularly the Brown Turkey. The Strawberry crop has been a good one; and Currants of all kinds are abundant; as are also Gooseberries where the buds have not been eaten out by bullfinches in winter, which was the case in some places. Of Apricots we have none, and Peaches and Nectarines are almost a failure on open walls, but good crops in orchard-houses. Of Plums there are scarcely any.—D. Uphill.

Cornwall.—Enys Penryn.—The fierce east wind which swept through the country when the fruit trees were in bloom, and just on the point of setting, committed sad havoc in this neighbourhood, as well as elsewhere. Here is a tale of woe which I was told a few days ago:—" " I have not," said my informant, "a Peach, a Nectarine, a Plum, a Pear, an Apple, a Raspberry—even my Roses are killed." His garden is exposed to the east. Raspberry canes in many places are killed; dwarf-trained and espalier-trained trees had the best of it, while tall, scraggy trees, whether Apple, Pear, Plum, or Cherry, if in exposed places, were stripped. In the sheltered spots there is some fruit. Apples are much under the average; Pears are also under average; Cherries a failure, except Morellos, which against north walls are an average; of Peaches and Nectarines we have a sprinkling; Raspberries and small bush fruits are under average; Figs against walls are an average crop; Plums are scarcer than they have been for many years past.—Henry Mills.

NORTH WESTERN DIVISION.

Lancashire.—Waterdale, St. Helens.—Around this neighbourhood fruit crops are on the whole very unsatisfactory; stone fruit of all sorts bloomed well, but scarcely a single fruit is the result, with the exception of Cherries, the sweet varieties of which are a fair crop, and the Morellos are also good. The Pear bloom was never finer than it was this year, and the Jargonelles set as thickly as possible, and were getting a good size, when the last severe frost in May caused every fruit to drop; even on the commonest sorts we have scarcely a single Pear. Amongst Apples Lord Suffield and a local variety called Hollyberry are literally loaded with fruit, the Manks and Keswick Codlins, Hawthornden, and Pott's Seedling are also carrying good crops, but all other sorts as a rule are failures. Black and Red Currants, and Raspberries are well loaded—the Fastolf Raspberry is the best. Strawberries made a fine show, but the fruit is very deformed, and ripens unkindly, the best sort on this cold clay soil is Vicomtesse Héricart de Thury.—James Smith.

—— **Otterspool.**—Fruit crops in this neighbourhood are, with few exceptions, a complete failure. Of stone fruits, such as Peaches, Nectarines, and Plums, there are none, consequent on the chilling easterly and north-easterly winds that prevailed almost without intermission during the months of March and April. In many places the trees themselves seem to have a struggle for existence, unless where prompt measures have been taken to arrest the ravages of green and black fly, and other aphides, which appear to be a sort of sequel to chills brought about by an ever-varying climate. The prospects of an extraordinary Pear crop were cut short by the unusually severe frosts that occurred during the first week in May, and the Apples narrowly escaped a similar fate. The old Hawthornden, Keswick Codlin, and Lord Suffield are bearing a fair crop, but the same cannot be said generally. Small fruits are a moderate crop throughout. Strawberries abundant; Vicomtesse Héricart de Thury ranks first for general purposes, and President, Oscar, Sir Charles Napier, and Dr. Hogg follow in rotation. Red, White, and Black Currants, Raspberries, and Gooseberries are plentiful, but from a fortnight to three weeks later than usual. I may add that Potatoes are clear of disease, and an excellent crop, as are all other vegetables, but we are fully three weeks behind our ordinary time of gathering.—W. Hinds.

—— **Haigh Hall, Wigan.**—The cultivation of hardy fruits in this, the centre of extensive coal fields, is not encouraging; for, owing to a continuance of cold easterly winds and frost during the month of May, many of the trees present a deplorable appearance, being nearly denuded of leaves. Peaches, Nectarines, Apricots, and Figs, do not succeed here in the open air. Apples are above an average crop; Keswick Codlin, Lord Suffield, King of the Pippins, Yorkshire Greening, Dumelow's Seedling, Cellini, Ribston Pippin, and Hawthornden are the best. Of Pears there are scarcely any: Marie Louise, Louise Bonne, Easter Beurré, Beurré Diel, Beurré Hardy, and Jargonelle are the most suitable sorts, and usually succeed on south and west walls. Cherries are a complete failure; Plums are very thin, and the trees are infested with aphides; Strawberries are very good, but they have suffered from the rain during the last week; Duc de Malakoff is our best sort, but Improved Black Prince, Vicomtesse Héricart de Thury, and President also do well. Gooseberries and Black Currants are thin but good; Raspberries and Red and White Currants are about an average.—Andrew Jamieson.

Cheshire.—Abney Hall, Cheadle.—Small fruits generally have been good in this district, but Apples, Pears, and Plums are almost a failure; indeed, I have not seen a Pear or Plum tree bearing anything like a crop this season. Of Apples, the best I have seen is the Cellini Pippin. Amongst Strawberries, the Elton Pine, just ripening, is heavily loaded; I have never, indeed, seen such a number of fruits upon single plants as I have seen on some of these: the soil in which they are growing is a stiff clay. We have no fruit on the walls here with the exception of a few Cherries, Beurré d'Aremberg, and Easter Beurré Pears, and some Plums.—Robert MacKellar.

EASTERN DIVISION.

Essex.—Audley End.—Many kinds of fruit here this season are a total failure, not caused altogether by the severe frosts of May, when we had 12° and 14°, but from the long continued cold weather which prevailed during March and April; owing to this and the badly ripened wood of the preceding autumn, many Peach and Nectarine trees are nearly killed, curl or blister being very prevalent. Apricots, too, have lost very many shoots from the same cause. The sorts of Pears that have stood the frost best here are Glou Morceau, Bezy de la Motte, Bergamotte d'Espéren, and Ne Plus Meuris as pyramids, and Beurré Rance and Beurré d'Aremberg on walls; on these we have a good crop. Of Apples the following are bearing a good crop, viz., King of Pippins, Cellini, Court Pendu Plât, Shepherd's Fame, Kentish Fill-basket, and Ribston Pippin. Of Cherries, Morello may be said to be good, other kinds half a crop; of Plums we have none on pyramids and very few on walls; Currants (Red and White) are a good crop, Black middling; of other small fruits the same may be said.—J. Bryan.

—— **Cossey Park, Norwich.**—Wall fruit of all kinds in this quarter is a failure, both protected and unprotected trees being nearly alike in this respect. Peaches and Nectarines under good clear glass, and even with the aid of heat, are only bearing thin crops, while those under old dark glass have suffered nearly as much as trees on open walls. Pears are scarce, and Apples far below the average, and in many cases worse than the bad crop of last year. Of Plums there are few or none, and the same may be said of Cherries. Gooseberries, Currants, and Raspberries are in general below the average. The same applies to Strawberries, whose stools or old plants suffered much, owing to the long and wet spring, which caused many blanks to occur in beds. Figs and Filberts are fair crops, but Walnuts, in many instances, are a failure. All kinds of fruit trees promised well until the blossoms suffered by ungenial weather, especially lack of sunshine. Potato crops good, but in damp spots diseased as usual.—J. Wighton.

Suffolk.—Culford Hall.—Fruit crops hereabouts, as far as Peaches, Nectarines, Apricots, Plums, Apples, and Pears are concerned, are a failure. Morello Cherries on north walls are carrying a fair crop, although lighter than usual; and Fig trees on walls and under glass without artificial heat are also carrying a somewhat light crop. Some Medlar trees, which here seldom fail to bear in abundance, have this season but a very light crop upon them. Walnuts are almost a failure. Filberts and Cobnuts are a fair, but by no means a heavy crop. Bush fruits, including Gooseberries, Raspberries, and the various kinds of Currants are abundant; and Strawberries of all kinds, but more particularly British Queen, are unusually plentiful, and the fruit remarkably fine. The heavy fall of rain which occurred on the 30th of June (exceeding an inch), followed by frequent and considerable rainfalls, proved very beneficial to such crops as the Strawberry, on the dry and warm soil of this locality. Among Pear trees on walls, a few of the more hardy kinds are bearing a light crop, notably Beurré Diel, a variety which hardly ever fails here. And among Apple trees there are a few exceptions to the general failure, a young healthy tree of Bedfordshire Foundling being furnished with a really good crop. The present season has been very peculiar as regards fruit crops. Early-forced Peaches and Nectarines here have been abundant, and the fruit remarkably fine; while in another structure devoted to the culture of the same kinds of fruit, and furnished with a heating apparatus which was only used to exclude frost, on account of the house containing bedding-plants, the crop is nearly a failure, as is also the case in a similarly constructed house in which there is no heating apparatus. The wood of the trees in each house had every appearance of being thoroughly ripened, and the bloom was abundant in each case; and although the very low external temperature at the time when the trees were in bloom may have proved injurious to those contained in the structure unprovided with a heating apparatus, still this cannot be supposed to have been the case as regards the other, and the result must, I think, be ascribed to other atmospheric influences or peculiarities of the season not yet recognised or under the control of the cultivator. Several of the older Apricot trees here were almost in full leaf about the end of January or early in February, and all have since died.—P. Grieve.

—— **Hardwicke House.**—In general terms there is no very good outdoor fruit this season; there are exceptions, it is true, and these are among the most singular and unaccountable phenomena of the season. The havoc is general among Apricots, Nectarines, Peaches, Plums and Pears; but Apples are a fair crop in gardens and orchards here and there, in some cases even an exceptionally heavy crop; and yet Apples ought not to have failed, as they flowered freely and also flowered late—severai weeks after the frost was over This failure of the Apples arose either from the embryo fruit havin been frozen in the bud state or from the prevalence of a north-east wind during the blooming season. Those who advocate setting Grapes and other fruit crops by the syringe, will also note that it was not only cold but dry during the whole time the Apples were in bloom. Walnuts, again, which flowered much later than the Apples, are also a failure, whereas the Filberts, that flowered much earlier than either, are a good crop in some districts. As to the causes of failure in the case of Peaches, Nectarines, Pears, and Plums, there exists no doubt whatever; they were simply frozen right through, after, in many cases, having attained a considerable size. As to sorts that yield the best results none have escaped this year; the failure of Plums is however the most complete. Referring to the gardens here only, we have a few Apricots, Peaches, Nectarines, Pears, and Apples, but not a single Plum in open quarters that I have yet seen. Outdoor Figs are a wonderfully full crop generally, and here in particular. Gooseberries and Currants are also plentiful. Raspberries are a good crop. Strawberries hardly an average, though President has been remarkably good; of Keen's Seedling there is not more than a third of a crop, and British Queen is a failure; yet in other gardens within a few miles British Queen, Dr. Hogg, Sir Joseph Paxton, and Carolina have been particularly good. Gooseberries, again, were entirely cut off in many gardens, and in some within a mile of Hardwicke not one was left; in fact, the more carefully one notes the changes of the frost and east wind among the fruit crops, the more one is impressed with the apparent capriciousness of the laws or conditions that cause twenty or a hundred crops to be taken and one every now and then left.—D. T. Fish.

—— **Henham Hall.**—Apricots are a poor crop, but far better on south aspects than on any other—a circumstance, doubtless, owing to the better ripened condition of the wood. Peaches, very poor; Plums, thin on walls, scarcely any on standards; Cherries, a good crop, especially Morellos and Dukes: Cherries are not largely grown in this locality, as the soil is not naturally suited for producing healthy trees. Figs are very fine and abundant; Gooseberries, Currants, and Raspberries are exceptionally fine, clean, and abundant, the midsummer rains having kept the soil continually moist; on that account Raspberries have been especially benefited, and promise to continue in bearing a long while, as the lateral growths are producing a fine crop. Strawberries are a good crop, and, although shorter in flower-stalks and foliage than usual, they have produced a lengthened supply of good fruit. Pears on walls are a good crop, middling on espaliers, and a failure on standards and pyramids; Apples are very variable, but quite an average crop; a great quantity of them have fallen lately, but the trees are healthy and in good foliage. Filberts and Walnuts are good. Taken collectively, stone fruits are much below an average—a circumstance which I consider quite as much attributable to unripened wood and imperfect blossoms as to the action of frost, for last summer's heat and drought were followed by a wet and sunless autumn and winter in which the trees could scarcely be called in a resting or dormant state, and this being followed by a prolonged period of cutting winds and frosty nights, completely paralysed them, so that only a small percentage of such blossoms as escaped frost have yielded fruits in perfection.—James Groom.

—— **Shrubland Park.**—Fruit crops in this neighbourhood are a failure, with the exception of small fruit. We have no Apricots and no Peaches, and the trees suffered severely; but they are now partially recovering. There are some Apples and Pears in a few sheltered places, but in a general way they are almost a blank; Plums of all sorts and Cherries are very scarce; Morellos are however a fair crop. I do not recollect having seen such a crop of Strawberries, and as regards size and quality they are all that could be desired: the sorts which we grow are Keen's Seedling, Sir Charles Napier, British Queen, and Dr. Hogg, and we force them in the order named, Raspberries, Gooseberries, and Currants are abundant. Walnuts are a light crop; Filberts rather better.—Thomas Blair.

—— **Woolverstone Park, Ipswich.**—Excepting Gooseberries, Raspberries, and Strawberries, the fruit crop in this district is almost an entire failure. Of Peaches and Nectarines there are very few indeed, and the trees here and in many other places have suffered to a serious extent, so much so that unless we get a fine autumn to ripen the late growth, little can be expected from them next season. Apricots at one time looked as if they would die altogether, and as it is they have lost most of their spurs and many of the main branches; but since fine warm weather has set in they have made good deal of young wood, so that there will be no difficulty in filling up most the vacant spaces, and refurnishing the walls. Cherries are thin everywhere, but with us are unusually fine, owing to the light crop which the trees have to carry, and from the sandy nature of the soil suiting them so well. Morellos, however, from being in less favoured aspects, are likely to be small and poor, as they suffered much from the May frosts. Passe Colmar and Marie Louise Pears on west walls set freely, and had to be thinned severely, but the fruit is swelling very irregularly, and looks as if it would never attain its proper size or form. The bloom on standards and pyramids was all destroyed, although it was unusually late in opening, which was likewise the case with that of Apples, so that the frost evidently injured the embryo fruit. It is very remarkable that Figs are more plentiful than they have been for years, which is probably owing to the mildness of the winter, and the late season at which they started into growth. Plums are a total failure, as they were caught in a tender state just after setting. Altogether this year is the worst one for fruit I ever remember, and must seriously affect growers for sale, besides being a great national loss.—J. SHEPPARD.

YORKSHIRE.

Sheffield, Wortley Hall.—In this district, all fruit-tree crops, save Cherries, are a failure, not so much owing to frosts and bad weather as scarcity of bloom; I have seldom seen so little blossom. All small fruits, where they have escaped the bullfinches and other bud destroyers, are tolerably abundant. Strawberries are a heavy crop. Indoor fruit crops are very fair, and I have never known first and second early crops of Grapes to be finer or better coloured, nor the foliage to be in better health or cleaner, notwithstanding that fire-heat has been so extensively used. Vegetables are good generally, except Potatoes, but unusually late. Potatoes, both on farms and in the garden, lack vigour, and the disease has appeared in an aggravated form upon the foliage of the variety called Snowflake in several places in this district.—J. SIMPSON.

Grimston Park, Tadcaster.—The fruit crops generally are the worst I have known for these past five years in this district. Apricots are a complete failure; our standard variety is Moor Park, which usually does very well with us. Apples are partial; we have a fair sprinkling of the following sorts, viz., Cockpit, Lord Suffield, Tower of Glamis, and Cox's Orange Pippin; the latter are on bush-formed trees on Paradise stocks; the trees are planted on small mounds on a stiffish soil, and well mulched in hot seasons. Of Peaches we have almost none: Royal George, Early York, Red Magdalen, and Bellegarde are the sorts most grown. Nectarines, too, are a failure: Elange and Violette Hâtive are our best varieties. Plums are fruitless; in fact, stone fruits generally are almost a complete failure. Nuts are very scarce; even Horse Chestnuts are dropping of in shoals. Small fruits are generally a good average. Strawberries have been very good as to quantity and size, but not good in flavour, owing to the sunless weather which we have had; Vicomtesse Héricart de Thury, President, and Keen's Seedling are our standard sorts; amongst a batch of fresh varieties, James Veitch promises well. Red and Black Currants are a good crop with us, but on low lands by the banks of the river (where much fruit is grown within a few miles) the crops are very partial; they were much damaged by frosts in May. Gooseberries are a good crop; at Cawood, about five miles from here, there are acres of Gooseberries grown to supply the markets of the great manufacturing towns in this county; the crops there are this season are very fair: Crown Bob and Whitesmith are the principal sorts grown. Cherries are very scarce; some bush-shaped trees of Morello have hitherto usually borne good crops. I am of opinion that the dull, wet autumn, with the consequent non-ripening of the wood and fruit-buds, is the principal cause of the thin crops of fruit this year.—H. J. CLAYTON.

Stourton Park, Knaresborough.—Fruit crops in this neighbourhood in general are light. Pears and Plums are great failures; Cherries and Apricots are also light. Of Peaches there is here a fair sprinkling on some trees. Raspberries are a fair crop, and so are Red Currants, but the fruit is small. Black Currants are a light crop. Gooseberries are a very light crop in some places, but in sheltered situations they are better. Strawberries are a fair crop, but not abundant. Apples in general are light—even Keswick Codlin on trees that were one sheet of bloom; on Cockpit there is a fair crop. —M. SAUL.

—— **Ribston Hall, Wetherby.**—The fruit crop this season is the worst which we have had for many years in this neighbourhood. Plums and Pears are a complete failure, and Peaches, Nectarines, and Apricots are very light indeed; many of the latter dropped at the stoning season. We shall not have the fifth of a crop of Apples; many of the trees are without fruit. Red, White, and Black Currants are a good crop; Strawberries the same, but the late rains have caused many of them to mould, Sir Harry being very bad in that respect, though with fine weather it is one of our finest varieties; I have a few of the Vicomtesse Héricart de Thury, which are doing unusually well; it will prove a very useful sort, both for market and preserving. Cherries are thin, though we had a fine show of bloom; Governor Wood is the sort that does best with us. Raspberries will ripen a good crop.—THOS. JONES.

NORTHERN DIVISION.

Cumberland.—Whitefield House.—The fruit crops in the north, though not such a complete failure as last year, will be very poor. Through May and June we had withering east winds, and frost at night; till the end of the latter month the hills were quite white with snow every morning, and in the valleys there was ice. The fruit in the earlier and better climate suffered most, and was entirely cut off after being well set. The show of blossom in the backward and high-lying districts was immense; a few days of terrible heat—one day 123°—scorched the most part. The Apples which have stood the best are Lord Suffield, Emperor Alexander, and Normanton Wonder. Currants are very plentiful but small, and have been much blasted by lightning. Strawberries very plentiful but small, and the heavy rains bring slugs (small white slugs) in such quantities that they eat the fruit as it ripens. Gooseberries are a wonderful crop, the branches so heavily laden that they have to be propped up with forked sticks. Raspberries plentiful but small. The leaves on all the large wall fruit trees are withered and brown, and the young wood curled and full of insects.—J. GILLBANKS.

Durham, Seaham Hall.—Of Apples we have a moderate crop; on some trees there is abundance, while on others there are but few, although they were in full blossom after the spring frosts had occurred; while they were in bloom, however, we had a continuance of cold east winds from the sea, the effect of which was a large amount of scorched foliage. Of Pears we have none worth speaking of; although we had a fine show of blossom on some of the trees, the fruit dropped off soon after setting. Of Plums we have none, this being a bad locality for this fruit. Of Peaches, Nectarines, Apricots, and Figs, none are grown out of houses. Gooseberries are abundant on trees that had been left unpruned, while from those that had been pruned all fell off soon after flowering; it is therefore now a question whether I shall prune oftener than once in two years, and then only remove branches that are too close. My attention was first directed to this by having a hedge of Gooseberry trees on which I never fail to have a crop; early spring frosts and winds cannot hurt the blossom under such circumstances, owing to its being in the middle of the bushes. Black Currants are a fair crop, although the sea winds scorched the foliage in exposed places. Red Currants are also a good crop; like the Black kinds they flower late, and are sure bearers. Raspberries are a fair crop, although on the top of the bushes all the shoots were scorched by the east winds. I never stake my Raspberries, but cut them off at about 4 ft. from the ground, allowing them to follow their own natural habit, which suits them better than tying them to stakes.—R. DRAPER.

Northumberland.—Shawdon Hall, Alnwick.—Fruit crops in Northumberland vary so much that it is difficult to give a correct estimate of them as a whole, but there is no doubt that they are below the average. Owing to the lateness of the season, too, many sorts of fruit, such as Strawberries, Cherries, Currants, &c., are ten days behind their usual time of ripening. Pears in this district never gave a finer promise, but the low temperature and heavy deluges of sleet that beat upon them for days in succession at the time when they were in blossom, destroyed the pollen and in some cases even rotted the truss of flowers. The same fate befel the Apricot bloom, and in many places the crop is meagre in the extreme, and in others an entire failure; indeed, this statement holds good regarding all wall fruits in this district. Apples were late in coming into blossom and escaped the late frost, therefore an abundant crop will be the result in most places. Bush fruit (with the exception of Gooseberries) is a fair crop. Raspberries are the finest crop that I have seen for years. There is a variety of this fruit grown in this district called Fill-the-basket; it was found (like the Fastolf) growing wild by a nurseryman in his grounds at Alnwick. It is a very dwarf sort, requiring no stakes to support it; bears very abundantly—so much so in some places that Fill-the-basket is both an appropriate and correct name for it. Here it bears only an average crop, but it has many qualifications to recommend it, especially for small gardens. The fruit is round in shape, with a fine rich aromatic flavour. In connection with the subject of fruit I may remark that among all the new varieties that are from time to time being tried in the gardens of this district, the old and long-tried sorts still hold their place.—JAMES THOMSON.

—— **Alnwick Castle.**—Fruit crops in this part of the country are very light—much below the average. The bloom on fruit trees of all kinds was abundant, and gave every indication that there would be good crops, but the long continuance of wet weather and little sun prevented the blooms from setting, and the consequence is that Peaches are not half a crop, and that Apricots, Plums, Pears, Cherries, and Apples are much below the average. Small fruits are, however, abundant, and likely to be very fine. Strawberries I never had finer, both as regards quantity and quality.—A. INGRAM.

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> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

IN THE KENTISH FRUIT GARDENS.

Kent, it has often been said, is the garden of England, both as regards soil and climate; its fruit farms, for which it has long been celebrated, are daily on the increase, although the space already devoted to them amounts to upwards of 12,000 acres. Of this area a great part is occupied by small fruits—such as Gooseberries, Currants, Strawberries, and Raspberries—and the quantities of these fruits sent annually to London and other large towns are enormous; people, indeed, unacquainted with fruit culture on a large scale can form no conception of the wide breadths of Strawberries and the vast plantations of orchard and bush fruits that are here to be found. About Swanley and its neighbourhood, from any hill-top, may be seen miles of the higher-lying grounds crowned with Gooseberries, Raspberries, or Strawberries, and the valleys filled with Hops. In some places may be seen patches of Potatoes or Mangel, crops which are always grown on land to be afterwards devoted to fruit culture. This is done in order to get the ground thoroughly clear of Bindweed (Convolvulus arvensis) and other weeds, which it would be difficult as well as expensive to do after the fruit trees had been planted. Most people, when planting fruit trees, prefer a southern aspect; but in Kent an easterly one is always chosen—and this for two reasons: one, because the produce is always later, thus escaping to some extent the late frosts in spring; the other, because should frost occur, the sun strikes the trees gradually, thawing and drying the blooms without injuring them; whereas, in a southern aspect, they are more suddenly exposed to the full force of the sun, and serious injury is often the result. It is a well-known fact, too, that crops in elevated positions escape frosts better than those in valleys. This was particularly noticeable in the case of Raspberries, which on the hills wholly escaped the severe frost of the 5th of May this year (so fatal to fruit crops in general), whilst in low grounds the early blooms suffered severely. The climate of this part of Kent is remarkably good, and fruit culture the staple trade. The hedgerows are overrun with Blackberries and wild Raspberries, amidst which are growing in abundance Damson, Plum, and Walnut trees. Everywhere may be seen gangs of women and boys busily engaged in gathering Strawberries, Raspberries, and Gooseberries. Collectively they earn large sums of money, good hands making as much as 11s. per day at Gooseberry picking, but the average rate is only about 6s. per day, and that only by means of hard work from light till dark. This year, even in this comparatively favoured locality, there is a total absence of stone and other hardy fruits; while in good seasons the trees are literally bent down by the Damsons and other Plums with which they are so heavily cropped. One fruit grower stated that if his trees of these fruits in the hedgerows were set 10 yards apart, they would occupy over twenty-two miles in length. On Walnut trees there is even this year a fair crop; but of Pears and Apples there are none worth mentioning, and in some cases avenues half-a-mile in length consisting of fine pyramidal trees, from 17 ft. to 20 ft. high, may be seen completely fruitless, and many trees have again begun to blossom.

Raspberries.

Of these there is this year a fair crop, though the fruit is not so large as could have been desired. The sort most preferred by growers is Carter's Prolific; its fruit, which is large, is of a deep red colour, a circumstance which renders it worth more money in the market than paler-fruited sorts, and moreover it is an abundant cropper, and the fruit ripens nearly all at one time—a great desideratum, as it always pays better to pick and sell at once than to gather at intervals. Raspberries are planted on thoroughly cleansed land heavily manured; the young plants are obtained from suckers saved from selected stools that have borne the largest crops and the finest fruit. These are cut back to two or three eyes in the autumn, and planted in rows 3 ft. apart, and 6 ft. asunder in the row. For the first three years after planting Potatoes or Mangels are in some cases grown between them, but after that if the Raspberries have grown well they require all the room. Three of the strongest suckers are always left for fruit bearing, and these are shortened back to about 3 ft. from the ground, the others being cut away. Late in autumn the ground between the rows is heavily manured and roughly ploughed up, a state in which it is allowed to remain until spring, when it is harrowed down, always choosing a time for the operation when the soil crumbles readily. Neither stakes nor ties of any kind are used, the canes being sufficiently strong to support themselves, and in some plantations of long standing may be found bushy-headed standards with stems about 12 in. or 18 in. high, and as thick as a broom-handle, bearing heavy crops. The ground between the rows is kept rigidly clear, both of weeds and young suckers, with the exception of such canes as are near the old stools. This work is performed by horse hoes, to which is attached a small harrow, which levels the ground and lays the uprooted weeds and suckers on the surface to be dried up by the sun. Picking usually commences the first week in July and continues until the beginning of August. It is performed by women and children, each of whom carries two baskets of the form of a flower-pot, one in front and one behind, slung over the shoulders; these when full are emptied by boys into wooden tubs provided for the purpose—that is, if the fruit be intended for preserving, but if for Covent Garden baskets are used. Few Raspberries, however, come to Covent Garden, compared with what go direct to fruit-preserving depôts—a fact which will be evident when I state that at Swanley the other day there was a merchant ready to purchase 100 tons of them at £40 per ton for that purpose. One grower, too, informed me that he had contracted with a manufacturer of preserves to supply him with 10 tons. Few of the Kentish Raspberries are picked with stalks attached to them; most of the fruit seen in Covent Garden furnished with stalks is supplied by growers near London, who pick their finest fruits for the purpose and put them at once in small punnets, which are packed, in quantities together, in large wooden boxes.

Strawberries.

For these the climate and soil of Swanley is admirably adapted; I say the soil, because the plants appear to succeed in it so well, but in reality the climate must have the most beneficial effect, or else cultivators as a rule are decidedly wrong in their statements with regard to the most suitable soil for Strawberries. It has often be said that a stiff clayey loam of a rich character is indispensable to the perfect culture of the Strawberry; the soil at Swanley is, however, exactly the reverse of this: in some places it may be termed rather solid and stiff, but in the majority of cases it is of a light sandy and remarkably stony character, and in this the plants appear to succeed quite as well, and bear crops equal to those planted in soil of a heavier nature. Indeed the soil which produces the best crops here is one in which no gardener would think of planting his Strawberries, and yet the yield is enormous: in well-established plantations may be seen as many as 100 good fruits on a single plant. This year I am told the fruits are not quite so large as usual on account of the dry weather, but still there are in places some very fine ones. The chief kinds grown are Keen's Seedling, Sir Joseph Paxton, and Sir Charles Napier; British Queen may be found here and there, but not in very large quantities. The plants are put out in well-manured soil in autumn, in rows about 2½ ft. apart, and 1 ft. 6 in. from plant to plant. Other crops are seldom planted between the rows, the aim being to give the Strawberries the full benefit of the soil. The plough is run between the rows in autumn, which keeps the plants on ridges, thereby keeping the roots well drained. In spring the horse hoe is used and the ground levelled, after which in many cases a slight coat of litter or straw is laid between the plants in order to prevent the fruit being splashed by the rains. The majority of Strawberries are grown in open fields by themselves, but large quantities are to be found between young Goos berry or Currant bushes, a position in which they succeed well until the trees get so large as to injure them by their shade. For preserving Strawberries are not in such great demand as other small fruits; therefore they are invariably picked with stalks attached to them. These, like Raspberries, are picked in small baskets, which when full are emptied into sieves holding about 24 lb. For each of these the pickers get 5d. in ordinary seasons, and at this rate they make good wages. The crop this year is not so heavy as last, but even now one grower informed me the other day that he had sent away nearly 6 tons. Altogether last year one extensive grower sent away 125 tons of Strawberries to the London markets; and in one day this year one grower sent away 2500 pecks, the weight of which is nearly 16 tons. All runners are kept regularly cut off the plants, and the ground is kept free from weeds. The best fruit finds its way to the London and other markets, but what are termed squashers, which means the bruised or over-ripe ones, are picked without stalks, put into tubs and disposed of at the jam factory.

Currants and Gooseberries.

These are chiefly grown between orchard trees, but in some cases large fields are wholly devoted to them. In the latter case they are planted in rows 6 ft. apart each way, with the exception of Black Currants, which are allowed a little more room. Between the rows, until the trees get too large, a row of Peas is planted; these are chiefly early sorts, which can be picked before very dry weather is expected, and the value of the crop is of such importance that from an acre of ground is often picked 200 bushels. A women picks in a good season 10 bushels per day, for which she is paid 3s. 4d. One man told me that he and his wife and his neighbour and his wife one day gathered 47½ bushels between four o'clock in the morning and eight o'clock at night. The only kinds of Currants grown are the Black and Red kinds, White ones being very little in request, except for dessert. The trees are in all cases well shaped and open in the centre, and they yearly make luxuriant growth and seldom fail to bear heavy crops. The ground between the rows is kept frequently stirred by the hoe, and in the case of Currant bushes growing under orchard trees, of which there are hundreds of acres, many of the rows being half a mile in length, it is impossible for man and horse to work the hoe on account of the branches of the orchard trees; therefore a boy is sent to guide the hoe, and a long rope is attached to it, the end of which is encircled round a wheel placed firmly on the grass paths that run through the plantation. To this rope a horse is yoked, and by walking straight up the path the hoe is readily drawn up the rows, the wheel, which is of course placed immediately at the end between two rows, keeping the rope in its proper place. Gooseberries are likewise grown in a similar manner, but the greatest amount is to be seen in open fields in elevated positions. Plenty of space is allowed for the trees to expand. The branches are not shortened back to any great extent, the object being to get the trees as large as possible, and so increase the amount of the crop. One very good arrangement I noticed was standard Pears and Plums placed alternately 20 ft. apart each way, the straight lines between them one way of the field being occupied by a row of Gooseberries. Between these were two other rows of Gooseberries 6 ft. apart, and between these again were rows of Strawberries. When the Gooseberry bushes are large enough they will of course require all the room, and the Strawberries will be done away with. This is, however, a very profitable method of cropping the ground, as it admits of all necessary operations being carried on without injury to either crop. Gathering commences as soon as the berries are at all saleable, and continues until they are ripe. In all cases the bushes are stripped at one picking, as much as 10 acres per week being sometimes cleared, ending with 20 to 30 in proportion as the markets require it; and as a week in favourable weather consists of only four-and-a-half days, the best market being on Saturday (to prepare for which it is necessary to leave off picking at two o'clock on Friday), the quantity of work to be done in a short time is immense; and if wet weather which bursts the fruit, or intense heat which scalds it, set in, picking the whole quantity is impossible. Some growers employ during the last two weeks of picking as many as 300 women and children. It only lasts a short time, and one grower told me he had sent to the north of England in two days about 300 bushels of fruit. Women sometimes pick as many as 30 sieves of Gooseberries per day, for which they receive about 10s. 6d. The chief kinds grown are Rough Reds and a yellow kind which is generally picked when green, and also many others; the red ones are those left to ripen. A smooth green kind is likewise largely cultivated for dessert. Some growers in good seasons have been known to gather more than 3000 bushels of Gooseberries.

Cherries.

These are chiefly grown in Grass orchards, in which the trees are managed on the run-wild system; many of them are very old indeed, and in good seasons they yield heavy crops. When in flower the Kentish Cherry orchards are well worth seeing, covering as they do the distant hills for miles round; and this year the quantity of blossom was unusually great, though the crop of fruit is far below the average. Cherry trees are planted on land overlying a dry subsoil; in clayey soil they are, as a rule, but short-lived. The kinds chiefly grown are the Kentish, Cluster, and Bigarreau; these are good croppers, and from well-established trees have frequently been gathered as much as 1000 lb. of good fruit. In some seasons the Cherry crops are sold by auction, and also by private contract, the purchaser paying the expenses of gathering; this is supposed to be the most profitable way of disposing of them. The buyer erects a wooden shed, in which the daily gatherings are put, and when all are gathered, they are sent to market as soon as possible. At Swanley, however, there are few Cherry orchards compared with those to be found in other parts of Kent.

Nuts.

Nut trees when young are cut back to within 1 ft. of the ground, which causes them to emit side shoots, which are regularly trained outwards by being tied to a wire or wooden hoop, which is placed in the centre, so as to give the tree a cup-like form. This is a capital method, inasmuch as it allows the sun to shine in the centre as well as all round the trees, and thus the wood gets well ripened, a circumstance indispensable to the production of large crops of Nuts. The trees are, as a rule, to be found alternately planted with standard Apple or Pear trees; in height they are seldom allowed to exceed 6 ft., severe pruning being yearly resorted to, in order to keep them within bounds. Many of the established bushes are 15 ft. in diameter at the top, and are as flat as a table, and on them this year, when Apples and Pears are scarce, it is satisfactory to find a fair crop both of Cobnuts and Filberts.

C. W. S.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Manure Water in Vineries.—It is well known that guano water is useful in the evaporating troughs in Vineries. I have had no guano this season, but I think I have been using a better substitute. For some time past I have kept the troughs in one of the Vineries in which the fruit is nearly ripe filled with manure-water made from pig manure. This years wood is hard and brown, and the leaves are as healthy and green as when the Vines were in flower.—Vitis.

Best Remedy for Phylloxera.—A French grower believes that the best way to combat the Phylloxera is to keep the soil very loose and open round the stems of the Vines, thus allowing a free ingress of air to their roots; then a good soaking of water, impregnated with tar or carbolic acid, not only kills the insects, but, we are assured, forms a good manure. The woollen refuse, so generally used as a manure in the south of France, is condemned, as it is believed that it is favourable to the propagation and development of the Phylloxera.—N.

Oranges and Lemons in Greece.—Greece and the Levant are countries in which Lemons and Oranges grow in abundance, and Dr. Landerer, of Athens, in a communication received from him on the subject, states that more than 100,000,000 Lemons, Oranges, and Citrons are consumed or exported by the inhabitants of various parts of Asia Minor. There are also met with all the other sorts of fruits of the family Hesperidæ, such as Citrus indica, commonly known as Mandarins. The fruits of Citrus Cedro and Citrus decumana are collected for the preparation of the confection Citrinate.

Eating Pine-apples.—To eat a Pine-apple, do not peel it; cut off the bottom. insert a fork over one of the lower "eyes," press downward, and then pull off a little cone. The cones gradually torn off are much softer than slices of the Pine bitten across the grain.—"Herald." [Some of the finest samples of West Indian Pine-apples now so common in our markets are as juicy and well flavoured as any Pine-apple could be.]

NOTES OF THE WEEK.

The Sacred Bean.—This, of all the plants generally relegated to the Botanic Garden, is the most deserving of general culture wherever there is a warm house and a tank—it need not be a large one. A plant now in flower at Kew is the handsomest plant in the place. In Japan it grows in masses in the swamps, and, though very handsome there, is even more striking when seen in small quantity but well grown.

Daily Garden Operations.—We commenced last week publishing the diary of work carried out in the gardens at Sherborne Castle, Dorset, by Mr. Pragnell, in succession to the excellent diary based on Mr. Denning's work. Mr. Pragnell has long been known to visitors to our principal flower shows as one of the best cultivators in England. He has contended with our best growers of garden produce and generally won. The acknowledged neglect of kitchen gardening for years past makes it all the more desirable that one thoroughly acquainted with this department should record his operations. We are convinced that this diary is the simplest guide to the best practice that can be given in such a form.

Philesia buxifolia in a Cool House.—This remarkably beautiful but rarely-seen plant is grown out-of-doors by clever cultivators in certain favoured districts, but throughout the country generally much the best way to treat it is to plant it out in a cool Fernery or in any kind of cool house, where convenient, associated with Ferns. It may now be seen on a little rocky bank of Ferns in the temperate house at Kew in good flower. Illustrating the cultivation of uncommon and difficult plants like this is, we submit, one of the right functions of a great garden like Kew; besides, such efforts to rival the bedding-out of the ordinary flower gardener should not be thought of for a moment.

Allamandas in Dorsetshire.—Mr. James, gardener to Lord Wolverton, at Inverne House, Blandford, has sent us some sprays of an Allamanda literally loaded with bloom. They were cut from a plant which covers the upper part of a span-roofed house 20 ft. by 18 ft. Last year it bloomed more than eight months, and it had upwards of 600 blooms expanded at one time. This year it began to flower before Easter, and has now 137 expanded blooms on it. It was cut back in February, and this year enough wood to make a large faggot was thinned out of it. It is planted in a box 2 ft. square.

Lomaria procera Hardy in Cornwall.—This very distinct and beautiful Fern, which has proved hardy in Cornwall, should be tried by all on the south coast and elsewhere who possess a well-sheltered outdoor Fernery. It has a very wide geographical range, being found from Mexico to Chili in the New World, and in South Australia, South Africa, and many other countries in the Old. The fronds submitted to us measured from 2 ft. to 3 ft. and had each from twenty to thirty pinnæ, the lower ones measuring 6 in. by 1½ in.—G.

Gladiolus tristis.—This little known Cape species is flowering freely at Tottenham, each flower-stem bearing from three to six blooms of a pale lemon colour slightly stained with purple; the segments are of equal length, the three upper ones having a purplish band running through the centre of each, and the three lower ones a few faint spots near the tips. The flowers have a perfume something like that of a Clove Carnation, but not so strong. G. cruentus, G. dracocephalus, and G. purpureo-auratus, are also just showing flower.—A.

Striped Petunias.—One of the prettiest flower-beds which I have seen for a long time is now in the Rectory garden at Ealing, and consists entirely of an even, circular mass of striped Petunias. Of these the best forms have medium-sized, perfectly round flowers, and from a packet of seed there will not be found two that are exactly marked alike. The growth is free yet even, and until the end of the summer a well-formed mass is easily maintained. In hot, dry situations these Petunias will thrive where many other plants would starve. Seed should be sown in pans early in March, the young plants pricked out into small pots when large enough to handle, and gradually hardened off so as to be ready for turning out about the middle of May.—A. D.

New Pelargoniums at Swanley.—Amongst the many Pelargoniums now in cultivation, it is difficult to discover which are the best and most attractive; notwithstanding the number, however, of so-called varieties that are daily being raised, there are yet some new and really distinct kinds. Of these I saw a few the other day in Mr. Cannell's nursery at Swanley. Here the plants are grown in good sandy loam in 6-in. and 8-in. pots, arranged on each side of a span-roofed house 100 ft. in length, and the quantity of flowers which each plant bears is remarkable. Amongst kinds likely to prove best for pot culture may be named Sir Garnet Wolseley, a brilliant scarlet; Malcolm, a kind with large trusses of crimson flowers, with an eye of the same colour; Jealousy, the nearest approach to a yellow which I have yet seen; and a magenta kind called Joseph Sommen. In the same collection were also Apple-blossom, a very free-flowering variety with large-petalled blossoms of a delicate pink and rose colour; and John Denny, a very distinct kind with orange-scarlet flowers tipped with bright purple. Amongst semi-double sorts may be named J. C. Rodbard, a fine kind with bright scarlet flowers. Quite a new race has also been obtained here, the result of a cross between the Zonal and Ivy-leaved kinds, the plants being for the most part intermediate between their parents. A mauve-coloured, semi-double Ivy-leaved variety was also very effective, very small plants of it flowering freely.—S.

Sweet Peas for Market.—In Mr. Henry Bailey's garden at Feltham are several rows of the white-flowered Sweet Pea, the blooms of which are gathered expressly for market purposes. A bright scarlet-flowered kind is also largely cultivated here, and seen together the scarlet and white flowers are very effective. These kinds, on account of the flowers being of decided and striking colours, are much more valuable for market purposes than any others.—C. S.

Begonias at Pine-apple Place.—These fill a span-roofed house here 80 ft. long and 25 ft. wide, and being just now in full flower, they are very attractive. They number upwards of 2000, presenting a varied mass of scarlet, orange, and rose. For decorative purposes, Begonias, grown as they are here, are unsurpassed; and considering their easy culture, they deserve to be largely grown. Many of the better kinds make good room plants, lasting as they do a long time in flower. They are also beginning to make their appearance in Covent Garden.—C. W. S.

New Botanic Garden, Hull.—This, which is to comprise about 35 acres, is to contain a winter garden, consisting of a range of glass houses 400 ft. long. The centre house, which is to be lofty, will be devoted to Palms and other tropical plants, the houses at each end being intended—one for aquatic plants, combined with tropical Ferns and their allies, and the other for special groups of Camellias and otherwise interesting Australian plants. In front of these houses is to be an Italian flower garden, and there is also to be an open lawn about 5 acres in extent, and a lake, covering some 3 acres, adapted both for boating and skating. Such rare trees and shrubs as are adapted to the locality will be interspersed in groups throughout the grounds, which under Mr. Niven's superintendence cannot fail to be skilfully laid out. In addition to the purely horticultural buildings, it is also proposed to erect a large room adapted for meetings, and which will answer the purpose of a lecture hall, botanical museum, and library of botanical works for reference; and it is hoped that arrangements may be made at some future time for erecting an aquarium.

Drawings of Chinese Plants.—The Botanical Department of the British Museum has lately been presented with a large series, amounting to nearly a thousand examples, of drawings of Chinese plants by native artists. They were drawn under the direction and at the expense of the late Mr. John Reeves, who was for many years resident at Canton, where he formed collections of native drawings illustrating not only all branches of national science, but also the manners and customs of the Chinese; and in honour of whom the genus Reevesia was named by Lindley. The whole of these have been presented to the Museum by Miss Reeves, mainly through the instrumentality of Mr. Carruthers, of the Botanical Department. The plant drawings are all life-size and remarkably accurate in form and colouring—of some of the more characteristic Chinese plants, such as the Chrysanthemum, a very large series of varieties is presented: the drawings of fruit are also of special interest. It is not, we believe, generally known that the Museum is extremely rich in unpublished drawings of plants. The magnificent series of Australian plants by Ferdinand Bauer has recently been placed in sunk mounts and arranged in suitable and handsome cases; it may be doubted whether any other establishment possesses a series so accurately executed and so exquisitely finished. Besides these, there is a large collection of folio drawings of plants from various parts of the world, by Sydney Parkinson, John Polydore Nodder, John Fredk. Miller, and other good artists, dating for the most part about a century back; also original drawings by Aublat, and coloured figures by Elvet and Jacquin, these being very elegant productions. The Kew Herbarium possesses a very extensive collection of figures of plants (mostly published) from various sources; these are arranged in a series parallel to that of the herbarium, to which they form a most useful adjunct, especially in connection with the work of naming plants from the Royal Gardens and other places.

ALPINE FLOWERS ON THE FAULHORN.

On the lower slopes of the Faulhorn, which is 8802 ft. above the sea, the usual Alpine pastures are passed, and where they have not been already cut they are gay with Campanulas (the pale blue C. barbata being one of the commonest), Astrantias, Phyteumas (white and blue), Hieracium aurantiacum, and other Hawkweeds and Ranunculuses in variety. Here and there, between the green Alps, a rocky brow is mounted, and on one of these rocks we found a fine plant of Dianthus sylvestris, the first we have seen this year. About a quarter of the way up Pine woods begin, with a luxuriant undergrowth of Whortleberries, Alpen-rosen (Rhododendron ferrugineum), White Heather (Erica carnea alba), Polygala Chamæbuxus, and Maianthemum bifolium. The last is an exquisite plant, which should be found in every English garden where peat beds abound, not only for the sake of its dainty heads of dwarf white flowers, but for its delicious Lily of the Valley scent, and its lasting powers in a cut state. Shady spots were full of Ferns, consisting of Lastrea Filix Mas, L. Oreopteris, Athyrium Filix Femina, and Blechnum. In the bogs we found plenty of our old English friends, Caltha palustris and Pinguicula alpina and P. vulgaris. Above the half-way house we reached a long stretch of heathery moors; the turf by the side of the rocky path was gay with Gentiana verna, G. acaulis, and the white G. frigida, and a Pansy (Viola calcarata) of an intense rich purple, which produced a most beautiful effect when seen in large masses on the short, green Grass. At Bachalp, 5649 ft. above the sea, the real Alpine vegetation began, and now we had a rich feast. Every rock was covered with Saxifrages in full flower, Androsace Chamæjasme, Primula farinosa, P. villosa, and P. integrifolia, which latter we found here for the first time. Bright pink cushions of Silene acaulis spread over the turf side by side with the yellow Ranunculus montanus, Gentiana bavarica, and the still more beautiful G. brachyphylla, of the same intense blue, but much larger, and with a white corona (I can describe it in no other way) in the centre of each flower. I found on the calcareous rock of which much of the Faulhorn is composed, a solitary specimen of the smallest of white Lilies (Lloydia serotina), for which I had hitherto searched in vain, but its small flowers look at a distance so like many of the Alpine Saxifrages, &c., that it may easily be passed by unnoticed. Near the summit of the hut a pitiless storm of rain and wind broke upon us, but as we struggled up over great sheets of yet unmelted snow, wherever a bit of ground or rock appeared, it was covered with the white blooms of Ranunculus glacialis, a close-growing species, with thick, bright green leaves, and large, white and sometimes cream-coloured flowers, which would make a beautiful addition to any English collection of Alpine plants. Altogether the Faulhorn is well worth a visit from the botanical collector, as the plants are those which in most places are only found on the highest and most inaccessible mountains, while here they can be obtained by a walk of four hours-and-a-half going up and three hours coming down; but the expedition should be made in one day, so as to avoid the necessity of sleeping at the wretched hotel at the top. Rose G. Kingsley.

ANOTHER TROPICAL DESSERT FRUIT.

To the list of tropical fruits given by Mr. Hobday (see p. 77) we may add Carica candamarcensis, of which there is at present a good specimen, both in flower and fruit, in the cool compartment of the economic house at Kew. It is a native of the Andes of Ecuador, where, for the sake of its edible fruits, it is cultivated up to 9000 ft. Monsieur Van Volxem was the first, we believe, to introduce living plants of this species into this country, and he spoke very highly both of the beauty of the tree and the quality of its fruit. Mr. Spruce, in the "Journal of the Linnean Society," informs us that when he visited the mountain of Tunguragua in 1858, the ground was strewed with its ripe and rotting fruits, which were smaller and sweeter than those of the common Papaw, and were the favourite food of the bears that infest the forests of that mountain. The trunk he describes as being as stout as that of the common Papaw, and the leaves even longer than in that species, the fruits as being 8 in. to 9 in. long, and sometimes nearly as broad; the flesh white (not yellow, as in the common Papaw), soft, and with a pleasant flavour, being sometimes very acid in cool sites. Moreover, we have the testimony of Sir Joseph Hooker on the subject. In describing the plant in the volume of the "Botanical Magazine" for 1875, he says:—"I can vouch for the delicious smell and grateful taste of the fruit, in both which qualities it differs from the common Papaw, which is not in my opinion worth cultivating for the dessert table, while this is so decidedly." The fruit of the common Carica was found by Vauquelin to contain fibrine, a substance previously supposed to be peculiar to the animal kingdom. The whole tree possesses the singular property of rendering tough meat tender by separating the muscular fibres, and its leaves are used as soap. The Kew plant mentioned at the commencement of these remarks has a naked stem about 4 ft. high, and a fine head of leaves, from the axils of which spring the flowers and fruit. It makes a handsome greenhouse plant, and with care might succeed outside in warm, sheltered spots in the south-western counties.

LEAVES AND TREES.

It might appear not unadvisable that every leaf should, as it grew, pay a small tax to the stalk for its sustenance, so that there might be no fear of any number of leaves being too oppressive to their bearer: which, accordingly, is just what the leaves do. Each, from the moment of its complete majority, pays a stated tax to the stalk, that is to say, collects for it a certain amount of wood, or materials for wood, and sends this wood, or what ultimately becomes wood, down the stalk, to add to its thickness. As the leaves, if they did not thus contribute to their own support, would soon be too heavy for the spray; so if the spray, with its family of leaves, contributed nothing to the thickness of the branch, the leaf families would soon break down under their sustaining loads. Each leaf adds to the thickness of the shoot, branch, and stem, with so perfect an order and regularity of duty, that from every leaf in all the countless crowd at the tree's summit one slender fibre, or at least fibre's thickness of wood, descends through shoot, through spray, through branch, through stem; and having thus added in its due proportion to form the strength of the tree, labours yet farther and more painfully to provide for its security; and thrusting forward into the root, loses nothing of its mighty energy until, mining through the darkness, it has taken hold in cleft of rock or depth of earth as extended as the sweep of its green crest in the free air. . . . If ever in autumn a pensiveness fall on us as the leaves drift by in their fading, may we not wisely look up in hope to their mighty monuments? Behold how fair—how far prolonged in arch and aisle, the avenues of the valleys, the fringes of the hills! so stately, so eternal, the joy of man, the comfort of all living creatures, the glory of the earth—they are but the monuments of those poor leaves that flit faintly past us as they do. Let them not pass without our understanding their last counsel and example—that we also, careless of monument by the grave, may build it in the world—monument by which men may be taught to remember not where we died, but where we lived.—"Modern Painters," vol. v.

Zephyranthes as Border Flowers.—As flowers of analogous properties to those of the Crocus tribe, these pretty and showy plants ought to prove attractive additions to our mixed flower borders as successors to the early spring bulbs, most of which have disappeared when the Zephyranthes come into bloom in July and August, at which time the large, star-like flowers, when fully expanded, produce a bright, spring-flower appearance that is very charming in the hot days of summer. Both the white and pink species figured in the coloured plate of last week's number of The Garden were blooming freely at Mr. Wilson's, Heatherbank, about this time last year, when the original drawing was made. Doubtless some of the other species, of which an interesting account was furnished last week, will prove equally hardy and free-blooming, and if so, the Zephyranthes family, as summer-flowering bulbs, will form a very pleasing addition and variety to our more well-known border flowers. At all events they are well worthy of cultivation.—H. N. H.

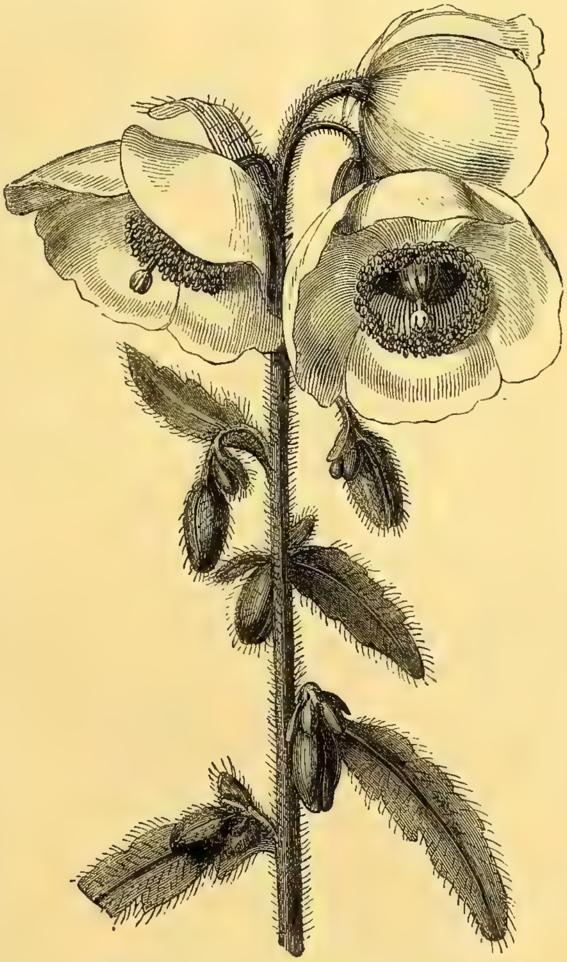
The Colorado Beetle.—The following extract from a letter from Messrs. Bliss & Sons, of New York, dated July 19, has been sent to us by Messrs. Hooper, of Covent Garden:—"We see by the papers that the Colorado Beetle is expected to make its appearance in England. Your people need not be frightened; a few doses of Paris Green will destroy it. It was feared a month ago that the Potato crop here would be destroyed, but the Beetles were soon disposed of, and Potatoes never looked better than they do now, and judging by present appearances there will be an abundant crop here this season."

A Fir tree 133 ft. high has just been cut down in Hungary. The proprie t had it cut because the top was too fir away from the bottom.—"Fun."

A GARDEN OF ROSES.

This may with truth be said of Messrs. William Paul & Son's Nursery at Waltham Cross at the present time; for the moment it is entered from the railway platform at Waltham one finds Roses on all sides—Roses in borders, Roses on palings, which literally glow with them; and further on a line of Roses with heads just high enough to be seen above the railway hedge. What Roses are capable of effecting in a decorative way is, however, best seen on the central walk, a wide grass promenade 600 yds. in length and 36 ft. in width, on the sides of which are beds of Roses, among which we noticed the old Crimson China, Souvenir de Malmaison, and others, with here and there clumps of pillar Roses which, seen against a background of ornamental trees and shrubs, have a much more pleasing effect than standards. Bourbons and Hybrid Perpetuals seem to be driving what are called summer Roses out of cultivation; but we think unjustly—an opinion from which few would dissent could they have seen a fine old untrained specimen of Madame Plantier, as we saw it here the other day, loaded with snowy blossoms, strikingly visible from all quarters of the nursery. Among crimson Roses in the Hybrid Perpetual class, Star of Waltham, Lord Macaulay, and Beauty of Waltham are three kinds which it will be difficult to supersede; and if two more be wanted of the same colour, we would select Duke of Edinburgh and Charles Lefebvre. Of the dark maroon class, none are better than Xavier Olibo, Prince Camille de Rohan, and Baron de Bonstetten. Of rose or pink Hybrid Perpetuals, Magna Charta, quite a new Rose, stands at the head: it resembles Princess Beatrice, but is somewhat paler and altogether fuller and finer. The Marquise de Castellane, François Michelon (figured in Vol. X. of The Garden), and Edouard Morren will be found to be its best associates. The finest white Hybrid Perpetual is still Madame Lacharme, a noble Rose, greatly superior both in size and beauty to Boule de Neige, Madame Noman, or Elise Boëlle, all white kinds. Almost the only colour now wanting among Hybrid Perpetuals is a good yellow, of which that class is still deficient. Among Moss Roses, none yet beats the common sort, which is said to have been a sport from the old Cabbage Rose, a kind that it resembles in fragrance and doubleness. The Crested Moss is, however, a good Rose, and so is Lanei; but the deepest crimson is perhaps Cellini; Little Gem, too, is a miniature Moss which few would like to be without, its small half-open buds being excellent for button-hole bouquets. Of white Moss Roses, none are thoroughly good; the best is perhaps Comtesse Murinais. As pillar Roses, few are better than Glory of Waltham, Coupe de Hebe, Charles Lawson, and Paul Perras, and for walls Amadis and gracilis are both brilliant; but their beauty is short-lived. On good aspects, Noisettes and Teas succeed well, and amongst these few are more desirable than Cloth of Gold where room can be afforded it. Then there are Maréchal Niel, Climbing Devoniensis, Gloire de Dijon, Solfaterre, Celina Forestier, and Fortune's Yellow; to which may be added the rose-coloured Belle de Bordeaux. Fine, however, as the display of Roses here is, this nursery possesses an interest for planters in other ways. It contains one of the best and most extensive collections of ornamental trees and shrubs anywhere to be found. The diversity of both colour and form obtainable amongst them is remarkable, and if ornamental grounds now-a-days be destitute of pieces of brightly-coloured planting, not only in autumn, but at all seasons of the year, it is not from lack of material suitable for the purpose. Purples of different shades are represented by the coloured-leaved variety of the common Berberry, the purple Beech, Birch, Nut, some of the Japanese Oaks, and the Black Oak (Quercus nigra); yellows, by the Golden Elder, Yew, Holly. Euonymus, Ivy (of which there is in this nursery a fine collection), Spiræa opulifolia lutea, the Golden Elm, Oak (Quercus concordia), the golden variety of Cornus Mas., and the Corstorphine Plane; whites, in the Silver Elder, Willow, Holly, Sea Buckthorn, Acer Negundo, Elm, and the silver-leaved variety of the Mahaleb Cherry. Of these principal colours, too, there are many gradations, and even blue in Picea nobilis glauca, a fine variety, without which no collection of Conifers can be complete. Golden Yews may be seen here of all sizes and forms—from little pyramids of the brightest yellow set on a grassy carpet, to round-headed standards with clean stems, like those of standard Roses. Form, indeed, is no less diversified than colour. Amongst standards, in addition to the Yews just mentioned, there are multitudes of Hollies, Box, and Portugal and Colchic Laurels; and if pyramids of various sizes and shades of colour be wanted, they may be found among the fine specimen Conifers (one of the most beautiful of which is Picea lariocarpa), ornamental-leaved Hollies, and other trees and shrubs of a handsome character, of which these grounds contain a remarkably rich and varied collection.

M.



The Blue Poppywort (Meconopsis Wallichiana).

Rock Gardening at Kew.—Those who have noticed with various feelings the style of the "rockworks" at Kew, will be interested to hear of the most recent attempt in this direction. In the pleasure grounds a long and wide border has recently been devoted to Sun Roses (Helianthemums). They do not require to be elevated on, or accompanied by, rocks in such soil as that of Kew; but for æsthetic or other reasons it has been thought right to scatter a great number of old bricks about them. These bricks have the white plaster still adhering to them, and, it need hardly be said, are not very comforting to those who seek for natural beauty or right design in a garden. Writers on landscape gardening who torment themselves and their readers with such definitions as "gardenesque," &c., may add another term to their vocabulary. Brick-rubbishesque will form a fine long word, and be as useful as the others in advancing the art of landscape gardening. Seriously, what we allude to is a feature that few poor amateurs cultivating cottage gardens would tolerate.

The Sky-blue Poppywort (Meconopsis Wallichiana) has been finely in flower at Kew lately. It is a very peculiar and beautiful plant, and well deserves to become generally grown. It is a native of the Himalayan Mountains. It is tall and stately in habit; a beautiful tuft of golden stamens in the centre contrasts with the rare blue of the corolla.

Gymnothrix latifolia.—Mr. Ellacombe informs us that this Grass is a very valuable one, on account of its rich green foliage and very elegant habit. It is particularly suitable for putting in the centre of a bed.

FORGET-ME-NOTS IN POTS.

Everyone is fond of the Forget-me-not in all its forms, and yet how seldom does one meet with it in small gardens! Many who think Forget-me-nots beautiful in a wild or semi-wild state, imagine that they cannot be kept alive in gardens, especially in the neighbourhood of towns: true, they often fail, but the fault lies with the cultivator. People take the common Forget-me-not out of a ditch or a swamp and set it in or on a bed or border of dry earth, and of course it withers up. Other varieties of the Forget-me-not are also often planted in most ungenial places, as, for instance, right in the eye of the sun, and in soils only fit for making bricks. The roots fail to get a good hold or suitable food, and their tops soon get burnt up. All these causes of failure are easily avoided by growing Forget-me-nots in pots, and by thus rendering them portable a choice or a change of site and of soil may be commanded at any time. All the Forget-me-nots do well in pots, and some of the prettiest plants for windows may be found in the common Forget-me-not of our ditches. As a bracket plant, or suspended in small vases or bottles of water, too, it is alike interesting and beautiful. All that is needed to get a fine mass of it is to take off a few cuttings, root them in damp soil or in water, and fill a vase, pot, or hanging basket with the young plants as they show flower. A glass basket makes a charming receptacle for the Forget-me-not; it will almost fill it with roots, and profusely cover it with flowering shoots and branchlets. If grown in pots or vases in soil, a mixture of equal parts leaf-mould and loam, or any rough vegetable matter, kept sufficiently moist, will answer. As soon as the plants show signs of fading fresh cuttings should be made and started afresh; or the plants may merely be pulled to pieces, the old, exhausted roots thrown away, and the branches already covered with roots formed into new plants by inserting any number of these cuttings, from six to a dozen or a score, into a fresh pot, vase, or basket. A shady situation, such as a north window, is the best situation for this Forget-me-not during the warm summer months, though earlier and later in the season it will thrive well in a southern or western window. One of the prettiest masses ever seen was suspended from the centre of an east window in a Hyacinth glass, which it filled to overflowing with beauty. I have been thus particular about the culture of this common Forget-me-not, because it is within reach of all, and, being half-aquatic, needs special treatment in regard to water. It must not, however, be thought that water is essential to success in its cultivation; it grows well in damp soil in a shady situation, and is an admirable plant to associate with Musk for clothing and sweetening outlying damp nooks and corners.

It must not be assumed that the other Forget-me-nots are also semi-aquatic. Such fine Forget-me-nots as Myosotis Impératice Elizabeth, M. azorica cœlestina, M. semperflorens, M. sylvatica, M. alpestris nana cœrulea, M. a. nana alba, and last, but not least, M. dissitiflora, thrive best in soil, and succeed under treatment similar to that given to other plants. For pot culture, M. dissitiflora is perhaps the best of all the Forget-me-nots. The colour, when the blossoms are fully expanded, is a most exquisite blue, and the plant is good in habit. It grows to a height of about 6 in., and spreads out freely, soon furnishing a 4-in. or 6-in. pot. The flowers open in succession from the base of the stem upwards, something like those of the Lily of the Valley; it therefore remains long in bloom. M. azorica cœlestina, an improved variety of a well-known rich dark blue Forget-me-not, is also a plant of great beauty. M. semperflorens is a hardy variety that continues flowering with little trouble from spring to autumn. The white and blue dwarf Forget-me-nots (M. alpestris nana) only grow about 4 in. in height, and are little gems for pot culture. These might be kept in small pots or even in saucers, as they require but little soil.

The whole of the Forget-me-nots are easily raised from seed or increased by cuttings, but seeds are the only practical mode of acquiring a stock of most of them. They may be sown as soon as they are ripe in spring or summer, or kept till next spring and sown in March or April. If sown at once, the plants will flower the next summer; and, of course, if not sown till next spring, they will hardly flower till late in the autumn or winter. They may be sown in the open air or in pans or pots, and being remarkably small, they can hardly be covered too lightly. They should also be sown rather thinly, for if sown too thickly, the plants are apt to damp off as soon as they are out of the ground. As soon as the young plants are large enough to handle, they should be pricked off or potted singly in the smallest thumb-pot. If placed under a hand-light or cold frame for a time, they will make rapid progress, and speedily form useful little plants. Shift as they require it into 2-in. and then into 3-in. pots, in which some of the smaller varieties, such as Myosotis alpestris and M. nana cœrulea, may be flowered, and almost any of the Forget-me-nots grow into excellent window or room plants in 4-in. or 6-in. pots. The best place in which to grow all these Forget-me-nots, when once they are established, and until they reach the flowering stage, is a partially-shaded, sheltered situation out-of-doors. They grow well in a mixture of rotten leaf-mould with about a fourth part of sand. The drainage should be ample, as most of these Forget-me-nots are semi-alpine plants, and cannot endure stagnant water at the roots, though during both the growing and flowering periods, they must not be allowed to become dry. They must not be treated to water so freely as the Myosotis palustris, or they will become unhealthy, and ultimately die. With M. dissitiflora, any garden and house might be enriched with Forget-me-nots the whole year round. Sow a few seeds in July, again in March and May, and a succession of flowering plants would be always available; or, perhaps better still, put in a few cuttings, either in pits or in the open air, from four to half-a-dozen times a year, and this Forget-me-not would be always in flower in the window, greenhouse, or open air. No plant pays better for a little extra shelter and cultivation than this lovely Forget-me-not. Plants of it, potted from the open ground in October or November, and placed in moderate heat—a temperature of 50° or 55° would be in flower at Christmas. It may easily be had in bloom by little stimulants of this kind indoors till March at which season it bursts into full beauty in the open air. Its continuance in beauty throughout the summer depends on two things—good feeding, and frequent renewal of plants by cuttings or from seeds. By the first only the old plants can be induced to bloom throughout the summer; but, as a rule, younger plants flower more freely. D. T. Fish.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Browallia elata and alba.—These are two most useful annuals for indoor decoration at this season, being easily cultivated and prolific bloomers. Sown in gentle heat in March, and potted and stopped as required to induce a bushy habit, they form very effective plants from this time onwards. We usually make two or three sowings during the season, as plants of such easy culture are best in a young, vigorous condition, and as soon as they begin to fade they are thrown away.—J. Groom, *Henham.*

Aerides virens.—One of the most attractive sights in the Exotic Nursery at Chelsea just now is a group of plants of this Aërides placed in a corner of one of the Orchid houses, where they are producing a profusion of gracefully-drooping flower-spikes covered with white, pink-tinted, waxy blossoms. These, like other plants, are seen to best advantage when grouped together as is now done here.—C.

Zygopetalum Sedeni.—A plant of this new hybrid Zygopetalum is now in good condition in Messrs. Veitch's Nursery at Chelsea. It bears four or five strong flower-spikes, which are beset with flowers having crisp chocolate petals, which contrast effectively with the vivid purplish-blue lip. This plant was raised by Mr. Seden, and is the result of a cross between Z. maxillare and Z. Mackayi. —S.

An Hotel Garden.—That excellent plan which we have so often advocated of turning the tops of houses in cities into gardens, has been carried out by the Palmer House in Chicago, and a portion of the roof in that hotel is now covered with a magnificent conservatory. The structure is entirely of glass and iron, and as it is built on an extension, its location is such that it opens directly out of the fifth floor corridor of the main edifice, which rises some two stories above. A fine collection of tropical and rare plants has been provided, and the regular heating apparatus of the house supplies ample warmth. The conservatory is open to guests of the hotel, and furnishes a delightful resort.—"Scientific American."

The Cultivation of Cytisus proliferus.—This, the Escobon of the Canary Islands, where it is much grown and highly esteemed as a forage plant, is now being attempted in stony and barren land in the southern provinces of Spain. There are many places at the Cape of Good Hope and in Australia, where this plant would succeed well, and probably prove of great value.—G.

THE FRUIT GARDEN.

EARLY PEARS.

As a rule early Pears, by which I mean Pears that ripen by the end of July and middle of August, are but of second-rate quality, and also lack what is of no less value, viz., keeping qualities; nevertheless, in a season like the present, when other fruits for dessert are so scarce, they are of the greatest value, and a tree or two of each variety should be grown in every moderately-sized garden. The following list includes those only that have come under my own observations:—Summer Doyenné, or as it is more frequently called Doyenné d'Eté (fig. 2), is the earliest kind to ripen, being generally quite over by the end of July. It a delicious little Pear, and is faithfully portrayed in the subjoined woodcut, but its season being so short militates against its ever being generally grown; and the same remark also applies to Citron des Carmes, the next kind to ripen, a fruit about the same size and form as the preceding, though of very different flavour, having a rich aromatic taste, which, however, is absent if the fruit be left to ripen on the tree, as the flesh then becomes mealy and insipid; in order to obviate this it should be gathered as soon as there are the least signs of maturity, and left to ripen in the fruit room. Another very excellent early kind, larger, though otherwise of much the same character as the preceding, is Peach or Pêche. This generally ripens about the end of the month or beginning of August, and is one of the most prolific of early Pears. Beurré Giffard (fig. 1) is one of the largest early ripening Pears that has come under my observation, being in all respects first-rate. The tree is of good habit and wonderfully prolific on the Quince stock. Jargonelle (fig. 3), which is too well known to require description, usually ripens from the beginning to the middle of August, its one great fault being that it soon rots at the core; in this respect it is very deceptive, and the only preventive is to gather early, as has just been recommended in the case of other kinds. There are several other very early sorts, such as Summer Rose, Early Rousselet, Beurré précoce, &c., but those to which I have just adverted are the best. W. W. H.

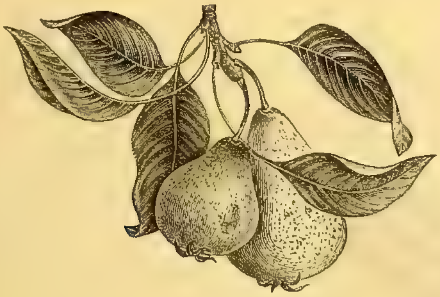


Fig. 1.—Beurré Giffard.

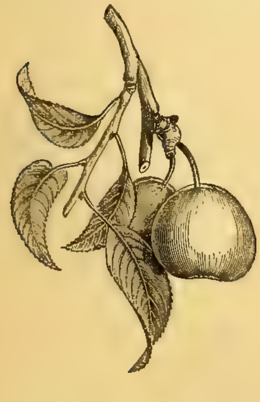


Fig. 2.—Summer Doyenné.

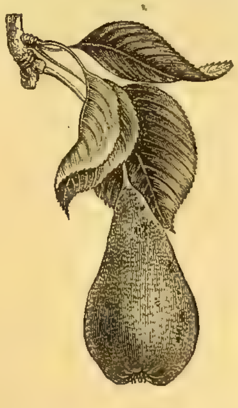


Fig. 3.—Jargonelle.

THE KITCHEN GARDEN.

SEASONABLE NOTES.

Endive.—This is indispensable for autumn and winter salads; the early-sown plants quickly bolting and thus becoming useless, a good breadth should be sown now in some open situation. The land need not be freshly manured for this crop, unless it be very poor, Sow in drills 1 ft. apart and 1 in. deep; thin out betimes, and transplant the thinnings if required, allowing each plant at least a square foot of space. Sow again about August 10, and plant out when ready on a dry warm border. The French Moss-curled and Large-leaved Batavian are two useful varieties.

Spring Cabbages.—Carter's Heartwell is well adapted for present sowing, as are also Atkins' Matchless, Enfield Market, and Wheeler's Cocoa-nut; three or four good kinds are better than a greater number. In the midland and northern counties the seeds should be sown at once, but there is no hurry for a week or so in localities situated to the south of London.

Globe Artichokes.—As fast as the heads are cut remove the stems. If the heads be thinned out, those that remain will be finer and better. A thorough soaking of liquid manure will help greatly to swell off the late ones.

Liquid Manure for Melons and Cucumbers.—Tie up a bushel of soot in an old guano bag, place it in a 50-gallon tub or barrel with 3 lb. or 4 lb. of guano, fill up with soft or pond water, stir it up well with an old birch broom, and throw in a lump of lime to clarify it. When using dilute it with an equal quattity of pond water, and use regularly when required. Soot has a wonderfully invigorating effect upon the foliage, and good substantial foliage is essential to the production of well-flavoured fruit. Red spider seems to fight shy of such foliage when grown without shade and in a well-ventilated atmosphere.

Tomatoes.—These are later in the open air than usual this year. It is therefore doubly necessary to keep the growth thin, to give the fruit a chance to ripen. All young shoots that spring from the main stems should be pinched or cut off, to throw all the strength of the plants into the main crop, as the fruit on the lateral growths will stand a poor chance of ripening. Stop all fruiting branches one joint beyond the cluster of blossoms, and do all tying or training betimes.

Close Cropping.—Vacant plots need not remain uncropped longer than is necessary for the completion of manuring and cultivating operations. Land does not need rest if well managed, and the more it is surface-stirred and cultivated the better for the succeeding crops. This has especial importance at this season, as when providing for the demands upon the vegetable department during winter and spring it is always better to have a surplus than a scarcity. Plants derive a good deal of their sustenance from the atmosphere, and a green crop, if not required for use, will, if dug in, return more to the land than it takes from it.

Open-air Mushroom Beds.—Collect some short stable manure and place it under cover till enough has accumulated to form a bed; do not allow it to heat violently; to every five or six barrowfuls of manure add a barrowful of fresh loamy soil, turning it and mixing all together. If convenient the bed may be made in a turf pit, or in a deep, old-fashioned frame. A somewhat shaded position will be better for the first bed; build up the beds as firmly as possible, and spawn as soon as the temperature of the bed falls to 85°. If the beds or ridges be altogether in the open air, they should be at least 2 ft. thick at the apex of the ridge.

Gathering, &c.—Gather all Peas and Beans as soon as they become fit for use, but at the same time avoid injuring the plants; this and securing a robust growth by thin planting, is the only way to secure a succession of pods from the same plants. E. Hobday.

A Good New Broccoli.—At this, the season for planting out Broccoli, allow me to recommend to your readers the new variety called Veitch's Self-protecting Autumn Broccoli. I grew a quantity of it last year and can honestly assert that it possesses excellent quantities. If planted now it will be ready for use about the middle of November, and by two other plantings at intervals of a fortnight or three weeks a supply may be had till the end of the first month in the new year. I think so highly of it that it is with me this season wholly taking the place of that excellent old kind, Snow's Winter White.—W. W. H.

Dipping Beans in Paraffin.—With reference to previous correspondence on this subject allow me to say that all the Beans which I dipped in paraffin have come up, and I therefore conclude that wire worm, with which I am tormented, did not like either the taste or the smell of the oil.—C. Doughty, *Hampton Park, Hereford.*

THE LIBRARY.

COTTAGE GARDENING.*

In this book it is sought to give concise instructions as to the best modes of cultivating the various products sought for in the smaller class of gardens. The enjoyment to be derived from a garden by no means depends on its size. Many persons find more pleasure in cultivating with their own hands a small garden than can possibly be enjoyed by those who leave their gardens to others. A garden need not be large to afford a great variety of edible products; and, as for flowers, many will probably agree with a saying of the late Mr. Mowbray Morris, long the manager of the "Times" newspaper, that "the best displays of 'bedding-out' in large places did not equal in beauty the simple flowers in a cottage garden." The writer has endeavoured to develop still further this purer taste in the cottage garden; to select among fruits and vegetables the very best and most productive kinds only; and, generally, to bring the information on all the subjects of which the book treats down to the time of issue.

GARDEN FERNS.

In an early volume of The Garden (see Vol. II., p. 9) we noticed at some length the work on "Ferns, British and Foreign," from the pen of Mr. John Smith, the veteran ex-curator of the Royal Gardens, Kew. We are glad to find that the favourable opinion which we then expressed of the book has been shared by the public, and that it has been found necessary to issue a new and enlarged edition of what is perhaps the most useful of Mr. Smith's pteridological works. The appendix to this edition contains about 230 species which have been introduced to our gardens since 1864. With regard to cultivation he tells us he has nothing to add to what had already appeared in the first edition; and this we can readily believe, as the chapter on that subject was so complete as to leave little to be desired.

Medicinal Plants.—The work on "Medicinal Plants," by Prof. Bentley and Dr. Henry Trimen, which we announced some time ago as in course of publication, has reached its twenty-second number, and demands a word of notice. The promises made at the commencement of the work seem to have been conscientiously fulfilled by the authors and artist (Mr. D. Blair); the figures are in almost every case thoroughly original in every detail, while the letterpress, both of the botanical and medical portions, is carefully brought up to date. In this last part are figured the Ground-nut (Arachis hypogæa), the Common Elder, the Chamomile (Ipomæa (Pharbitis) Nil), the Pennyroyal, the Darnel, and the Maize, this last occupying a double plate. In so many figures it could hardly be expected that all would be equally good. The Pennyroyal, the Maize, and the Ground-nut seem to us the best in the present number.

Familiar Wild Flowers.—We have received the two first numbers of a little work entitled "Familiar Wild Flowers," by Mr. F. E. Hulme, which aims at presenting coloured plates and popular descriptions of British plants. The intention of the book is good, for, in spite of the various published plates of our English wild flowers, there are none, with the exception of those in Curtis's "Flora Londinensis," which can be deemed satisfactory from an artistic point of view. We regret, however, that we cannot speak favourably of the figures before us, which are sometimes ungraceful in form (as in the case of Convolvulus arvensis, which looks as though stamped out in metal), or exaggerated in colouring (as the leaf of Geranium pratense), while the letterpress is scarcely up to the mark.

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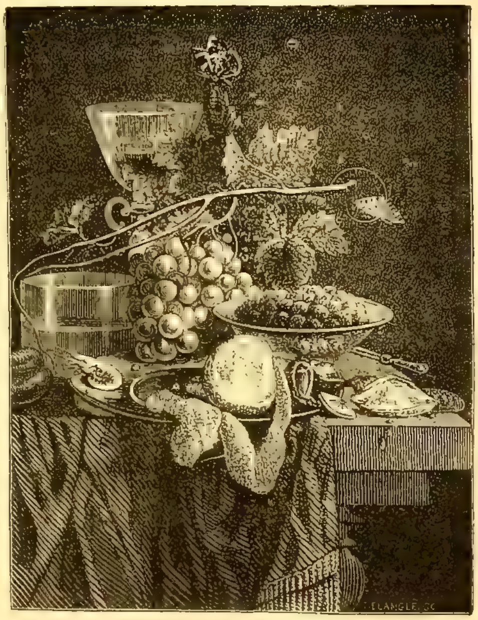
* "Cottage Gardening: or, Flowers, Fruits, and Vegetables for Small Gardens." By E. Hobday. London: Macmillan & Co., 1877.

THE GREAT FLOWER PAINTERS.

DAVID DE HEEM—BORN 1600, DIED 1674.

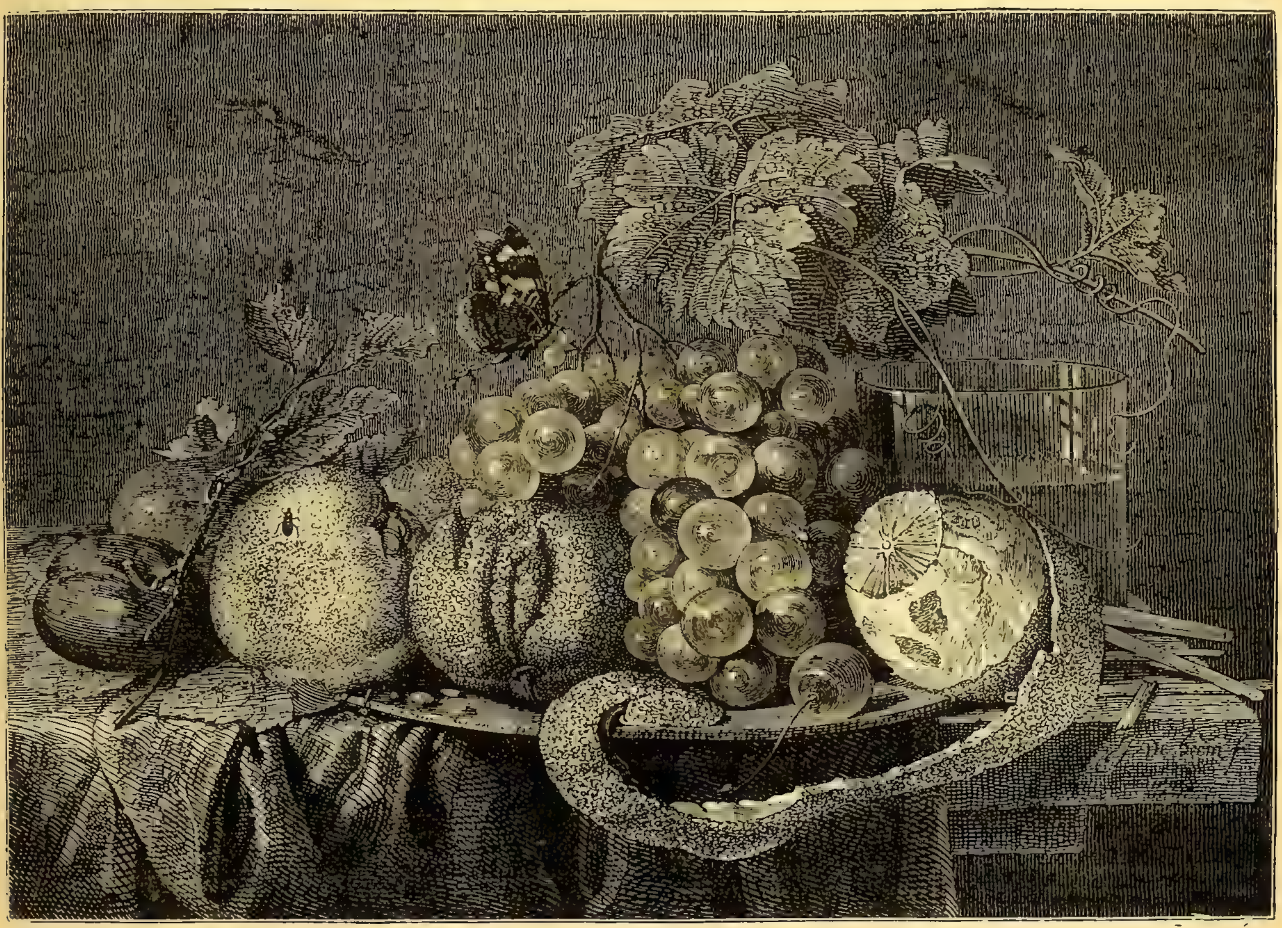


Works of the great Flower Painters.—Group of Fruits by De Heem.

David de Heem, though he occasionally painted flowers with all the care and minute precision which he devoted to fruit painting, and such table ornaments as are used for its display, was nevertheless avowedly inferior to Van Huysum in the treatment of flowers. In the design and high finish of his fruit, however, he surpassed all his cotemporaries. The extraordinary care and finish which he lavished upon his compositions, representing various kinds of fruits accompanied by suitable accessories, rendered his works so precious in the eyes of the Dutch connoisseurs of the day, that he was enabled to command higher prices than any other painter of a similar class; and so great became the demand for his pictures, even at their extravagantly high market value, that only princes could hope to become their possessors. From one of his royal patrons he received the honour of knighthood, and he eventually realised a handsome independence as the reward of his skilful and ever-active pencil. He was born at Utrecht, where his father before him had acquired considerable fame as a fruit painter, whose skill was, however, eclipsed by the superior abilities of his son. Our large engraving offers a favourable example of the artist's manner, and exhibits a selection of his most favourite subject-models, among the most prominent of which is frequently found, as in our illustration, a partially-peeled Lemon. He became a wonderful adept at the delineation of this often-chosen model, as will be seen in the carefully rendered reproduction of our engraving. The juicy appearance of the cut end of the Lemon, and of the other portions of the interior of the fruit where the inner skin has been pared away, are most exquisitely rendered; while the granulations of the exterior of the rind are wrought out with a persevering labour and accuracy that makes the artist's work seem almost the actual reality. The transparency of the Grapes is equally well rendered, and the foliage of the Vine branch is as graceful as if painted by Van Huysum himself. The undersde of the wings of the "Red Admiral" butterfly (Vanessa Atalanta), just settled on the bunch of Grapes, would satisfy an entomologist—even a lepidopterist—by the excessive accuracy with which the most minute markings have been reproduced; while the branch of Plums, the solitary Cherry, and all the inferior accessories are wrought up with the highest conceivable degree of finish. Our smaller example represents a dish of Raspberries, painted with a laborious care and juicy brush-handling that is beyond all praise; and the bunch of Grapes and ever-recurring peeled Melon exhibit an equal amount of careful and successful treatment. Some of his pictures represent such subjects as a dish of oysters, rendered with an attractive realism that might delight the greatest gourmand of those bivalves; at other times a dish of crayfish, a group of dead birds, and various other subjects formed his models; but these do not concern the readers of The Garden, to whose appreciation the fruit paintings of the master chiefly appeal. After the troubles in the town of Utrecht which, in 1671, drove so many of its inhabitants to seek an abode elsewhere, De Heem took shelter in Antwerp, where he passed the remaining years of his life. It was there that he became acquainted with Snyders, whose paintings of fruit, &c., on a Rubens-like scale, influenced to a certain extent the style of De Heem in his later works, and it was there that he became the friend of the celebrated Teniers, in one of whose greatest works—a kitchen scene—De Heem painted the fruits, vegetables, and other accessories. This picture was last sold to M. Thibeaudeau for the large sum of 5,500 francs.

H. N. H.

Symphytum orientale.—Among hardy spring-flowering plants an eastern species of Comfrey (Symphytum orientale) deserves a place. It is not often met with in gardens, but may be seen in masses every spring and early summer on the embankment immediately below the down platform of the Isleworth railway station, (where it must have been established for some years), and proves a striking and conspicuous object. It is a handsome plant of bushy habit, growing about 1½ ft. high, with much branched stems and a profusion of pure white flowers, which are produced much more freely than those of the common Comfrey, and do not fall off so readily as those of that species. Roots removed to a garden have at once established themselves, and the only drawback to its usefulness as a spring garden flower is the probability of its degenerating into a weed, from the rapidity of its increase. It is figured in the "Botanical Magazine," t. 1982.—James Britten.



Works by the great Flower Painters.—Group of Fruits by De Heem.

Dried Peaches.—The Cambridge "Maryland Chronicle" says:—"Accounts still agree that the Peach crop will be immense, although in some parts of the peninsula the yield will be very small. Not one-half of the crop will be sent to the market in the natural state, owing to the great excess of the supply over the demand. Last year experiments were made in drying the fruit by intense heat, and this year that branch of the business will be prosecuted extensively, especially in Delaware. A bushel of Peaches contains two gallons of water, which can be driven out in a few hours by evaporation, and the slices, when brought into contact with water again, are found to be not materially altered in taste. Europe is the market in which the dried Peaches are to be sent."

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 87).

Rye.

(1) *Iris.* Ceres, thou bounteous lady! thy rich leas
Of Wheat, Rye, Barley, Vetches, Oats, and Peas.
Tempest, act iv., sc. 1.

(2) *Iris.* You sun-burned sickleman of August weary
Come hither from the furrow and be merry,
Make holiday, your Rye-straw hats put on.
Ibid., act iv., sc 1.

(3) *Song.* Between the acres of the Rye
These pretty country folks would lye.
As You Like It, act v., sc. 3.

The Rye of Shakespeare's time was identical with our own (Secale cereale). It is not a British plant, and its native country is not exactly known; but it seems probable that both the plant and the name came from the region of the Caucasus.

As a food plant Rye was not in good repute in Shakespeare's time. Gerarde said of it, "It is harder to digest than Wheat, yet to rusticke bodies that can well digest it, it yields good nourishment." But "recent investigations by Professor Wanklyn and Mr. Cooper appear to give the first place to Rye as the most nutritious of all our cereals. Rye contains more gluten, and is pronounced by them one-third richer than Wheat. Rye, moreover, is capable of thriving in almost any soil."—"Gardeners' Chronicle," 1877.

Saffron.

(1) *Ceres.* Who (*i.e.* Iris), with thy Saffron wings upon my flowers,
Diffusest honeydrops, refreshing showers.
Tempest, act iv., sc. 1.

(2) *Antipholus of Ephesus.*
Did this companion with the Saffron face
Revel and feast it at my house to-day?
Comedy of Errors, act iv., sc. iv.

(3) *Clown.* I must have Saffron to colour the Warden pies.
Winter's Tale, act iv., sc. 2.

(4) *Lafeu.* No, no, no, your son was misled with a snipt-taffeta fellow there, whose villanous Saffron face would have made all the unbaked and doughy youth of a nation in his colour.
All's Well That Ends Well, act iv., sc. 5.

Saffron (from its Arabic name, *al zahafaran*) was not in Shakespeare's time limited to the drug or to the Saffron-bearing Crocus (C. sativus), but it was the general name for all the Croci, and was even extended to the Colchicums, which were called Meadow Saffrons. We have no Crocus really a native of Britain, but a few species (C. vernus, C. nudiflorus, C. aureus, and C. biflorus), have been so naturalised in certain parts as to be admitted, though very doubtfully, into the British flora; but the Saffron Crocus can in no way be considered a native, and the history of its introduction into England is very obscure. It is mentioned several times in the Anglo-Saxon leech books—"When he bathes, let him smear himself with oil; mingle it with Saffron" (Tenth century Leech Book, ii., 37). "For dimness of eyes, thus one must heal it: take Celandine one spoonful, and Aloes, and Crocus (Saffron in French)" ("Schools of Medicine," tenth century, c. 22). But in these instances it may be only the imported drug; but the name occurs in an English vocabulary among the nomina herbarum (*i.e.*, names of herbs or plants)—"Hic Crocus, A^{e} Safurroun;" and in a pictorial vocabulary of the fourteenth century, "Hic Crocus, An^{ce} Safryn;" so that I think the plant must have been in cultivation in England at that time. The usual statement, made by one writer after another, is that it was introduced by Sir Thomas Smith into the neighbourhood of Walden in the time of Edward III., but the original authority for this statement is unknown. The most authentic account is that by Hakluyt in 1582, and though it is rather long, it is worth extracting in full. It occurs in some instructions in "Remembrances for Master S.," who was going into Turkey, giving him hints what to observe in his travels:—"Saffron, the best of the universall world, groweth in this realme. . . . . It is a spice that is cordiall, and may be used in meats, and that is excellent in dying of yellow silks. This commodity of Saffron groweth fifty miles from Tripoli, in Syria, on an high hill, called in those parts Gasian, so as there you may learn at that part of Tripoli the value of the pound, the goodnesse of it, and the places of the vent. But it is said that from that hyll there passeth yerely of that commodity fifteen moiles laden, and that those regions notwithstanding lacke sufficiency of that commodity. But if a vent might be found, men would in Essex (about Saffron Walden), and in Cambridgeshire, revive the trade for the benefit of the setting of the poore on worke. So would they do in Herefordfordshire by Wales, where the best of all England is, in which place the soil yields the wilde Saffron commonly, which showeth the natural inclination of the same soile to the bearing of the right Saffron, if the soile be manured and that way employed. . . . . It is reported at Saffron Walden that a pilgrim, proposing to do good to his countrey, stole a head of Saffron, and hid the same in his Palmer's staffe, which he had made hollow before of purpose, and so he brought the root into this realme with venture of his life, for if he had bene taken, by the law of the countrey from whence it came, he had died for the fact" ("English Voyages," &c., vol. ii.). From this account it seems clear that even in Hakluyt's time Saffron had been so long introduced that the history of its introduction was lost; and I think it very probable that, as was suggested by Coles in his "Adam in Eden" (1657), we are indebted to the Romans for this, as for so many of our useful plants. But it is not a Roman or Italian plant. Spenser wrote of it as—

Saffron sought for in Cilician soyle—

which information he derived from Pliny. It is a native of Asia Minor, but so altered by long cultivation that it never produces seed either in England or in other parts of Europe. This fact led M. Chappellier, of Paris, who has for many years studied the history of the plant, to the belief that it was a hybrid; but finding that when fertilized with the pollen of a Crocus found wild in Greece, and known as C. sativus or Græcus (Orphanidis) it produces seed abundantly, he concludes that it is a variety of that species, which it very much resembles, but altered and rendered sterile by cultivation. It is not now much cultivated in England, but we have abundant authority from Tusser, Gerarde, Parkinson, Camden, and many other writers, that it was largely cultivated before and after Shakespeare's time, and that the quality of the English Saffron was very superior. The importance of the crop is shown by its giving its name to Saffron Waldon in Essex, and to Saffron Hill in London, which "was formerly a part of Ely Gardens" (of which we shall hear again when we come to speak of Strawberries), "and derives its name from the crops of Saffron which it bore" (Cunningham). The plant has in the same way given its name to Zaffarano, a village in Sicily near Mount Etna, and to Zafaranboly, "ville située près Inobole en Anatolie, au sud-est de l'Ancienne Héraclée" (Chappellier). The plant is largely cultivated in many parts of Europe, but the chief centres of cultivation are in the arrondissement of Pithiviers in France, and the province of Arragon in Spain, and the chief consumers are the Germans. It has also been largely cultivated in China for a great many years, and the bulbs now imported from China are found to be in many points superior to the European—"l'invasion tartare aurait porté le Safran en Chine, et de leur côté les croisés l'auraient importé en Europe" (Chappellier).

I need scarcely say that the parts of the plant that produce the Saffron are the sweet-scented stigmata, the Crocei odores of Virgil; but the use of Saffron has now so gone out of fashion, that it may be well to say something of its uses in the time of Shakespeare, as a medicine, a dye, and a confection. On all three points its virtues were so many that there is a complete literature on Crocus. I need not name all the books on the subject, but the titlepage of one (a duodecimo of nearly three hundred pages) may be quoted as an example:—"Crocologia seu curiosa Croce Regis Vegetabilium enucteatio continens Illius etymologiam, differencias, tempus quo viret et floret, culturam, collectionem, usum mechanicum, Pharmaceuticum, Chemico-medicum, omnibus pene humani corporis partibus destinatum additis diversis observationibus et questionibus Crocum concernentibus ad normam et formam. S. R. I. Acadamæ Naturæ curiosorum congesta a Dan: Ferdinando Hertodt, Phys. et Med. Doc, &c., &c. Jenæ. 1671." After this we may content ourselves with Gerarde's summary of its virtues—"The moderate use of it is good for the head, and maketh sences more quicke and lively, shaketh off heavy and drowsie sleep and maketh a man mery." For its use in confections this will suffice for the "Apparatus plantarum" of Laurembergius, 1632—"In re familiari vix ullus est telluris habitatus angulus ubi non sit croci quotodiana usurpatio, aspersi vel incocti cibis." And as to its uses as a dye, its penetrating powers were proverbial, of which Luther's Sermons will supply an instance—"As the saffron bag that hath bene ful of saffron, or hath had saffron in it, doth ever after savour and smel of the swete saffron that it contayneth; so our blessed Ladye which conceived and bare Christe in her wombe, dyd ever after resemble the maners and vertues of that precious babe which she bare."—"Fourth Sermon," 1548. One of the uses to which Saffron was applied in the Middle Ages was for the manufacture of the beautiful gold colour used in the illumination of missals, &c., where the actual gold was not used. This is the recipe from the work of Theophilus in the eleventh century—"If ye wish to decorate your work in some manner take tin pure and finely scraped; melt it and wash it like gold, and apply it with the same glue upon letters or other places which you wish to ornament with gold or silver; and when you have polished it with a tooth, take saffron with which silk is coloured, moistening it with clear of egg without water, and when it has stood a night or the following day cover with a pencil the places which you wish to gild, the rest holding the place of silver."—"Book 1., c. 23" (Hendrie's Translation).

Though the chief fame of the Saffron Crocus is as a field plant, yet it is also a very handsome flower; but it is a most capricious one, which may account for the area of cultivation being so limited. In some places it entirely refuses to flower, as it does in my own garden, where I have cultivated it for many years but never saw a flower, while in a neighbour's garden, under apparently the very same conditions of soil and climate, it flowers every autumn. But if we cannot succeed with the Saffron Crocus, there are many other Croci which were known in the time of Shakespeare, and grown not "for any other use than in regard of their beautiful flowers of several varieties, as they have been carefully sought out and preserved by divers to furnish a garden of dainty curiosity." Gerarde had in his garden only six species; Parkinson had or described thirty-one different sorts, and after his time new kinds were not so much sought after till Dean Herbert collected and studied them. His monograph of the Crocus, in 1847, contained the account of forty-one species, besides many varieties. The latest arrangement of the family, by Mr. J. G. Baker, of Kew, gives forty-seven species, besides varieties; of these all are not yet in cultivation, but every year sees some fresh addition to the number, chiefly by the unwearied exertions in finding them in their native habitats, and the liberal distribution of them when found, of Mr. George Maw, of Broseley, to whom all the lovers of the Crocus are most deeply indebted. And the Croci are so beautiful that we cannot have too many of them; they are, for the most part, perfectly hardy, though some few require a little protection in winter; they are of an infinite variety of colour, and some flower in the spring and some in the autumn. Most of us call the Crocus a spring flower, yet there are more autumnal than vernal species, but it is as a spring flower that we most value it. The common yellow Crocus is almost as much "the first-born of the year's delight" as the Snowdrop. No one can tell its native country, but it has been the brightest ornament of our gardens, not only in spring but even in winter for many years. It was probably first introduced during Shakespeare's life. "It hath floures," says Gerarde, "of a most perfect shining yellow colour, seeming a far off to be a hot glowing coal of fire. That pleasant plant was sent unto me from Robinus, of Paris, that painful and most curious searcher of simples." From that beginning perhaps it has found its way into every garden, for it increases rapidly, is very hardy, and its brightness commends it to all. It is the "most gladsome of the early flowers. None gives more glowing welcome to the season, or strikes on our first glance with a ray of keener pleasure, when, with some bright morning's warmth, the solitary golden fringes have kindled into knots of thick-clustered yellow bloom on the borders of the cottage garden. At a distance the eye is caught by that glowing patch, its warm heart open to the sun, and dear to the honey-gathering bees which hum around the chalices."—Forbes Watson.

With this pretty picture I may well close the account of the Crocus, but not because the subject is exhausted, for it is very tempting to go much further, and to speak of the beauties of the many species, and of the endless forms and colours of the grand Dutch varieties; and whatever admiration may be expressed for the common yellow Dutch Crocus, the same I would also give to almost every member of this lovely and cheerful family.

Samphire.

Edgar. Half-way down
Hangs one that gathers Samphire, dreadful trade!
Methinks he seems no bigger than his head.
King Lear, act iv., sc. 6.

Being found only on rocks, the Samphire was naturally associated with St. Peter, and so it was called "in Italian Herba de San Pietro, in English Sampier and Rock Sampier;"—in other words, Samphire is simply a corruption of Saint Peter. The plant grows round all the coasts of Great Britain and Ireland, wherever there are rocks on which it can grow, and on all the coasts of Europe, except the northern coasts; and it is a plant very easily recognised, if not by its pale green, fleshy leaves, yet certainly by its taste, or its "smell delightful and pleasant." The leaves form the pickle, "the pleasantest sauce, most familiar, and best agreeing with man's body," but now much out of fashion. In Shakespeare's time the gathering of Samphire was a regular trade, and Steevens quotes from Smith's "History of Waterford" to show the danger attending the trade:—"It is terrible to see how people gather it, hanging by a rope several fathoms from the top of the impending rocks, as it were, in the air." In our own time the quantity required could be easily got without much danger, for it grows in places perfectly accessible in sufficient quantity for the present requirements, for in some parts it grows away from the cliffs, so that "the fields about Porth Gwylan, in Carnarvonshire. are covered with it." It may even be grown in the garden, especially in gardens near the sea, and makes a pretty plant for rockwork.

There is a story connected with the Samphire which shows how botanical knowledge, like all other knowledge, may be of great service even where least expected. Many years ago a ship was wrecked on the Sussex coast, and a small party were left on a rock not far from land. To their horror they found the sea rising higher and higher, and threatening before long to cover their place of refuge. Some of them proposed to try and swim for land, and would have done so, but just as they were preparing to do so an officer saw a plant of Samphire growing on the rock, and told them they might stay and trust to that little plant that the sea would rise no further, for that the Samphire, though always growing within the spray of the sea, never grows where the sea could actually touch it. They believed him and were saved.

Savory.

Perdita. Here's flowers for you—
Hot Lavender, Mints, Savory, Marjoram.
Winter's Tale, act iv., sc. 3.

Savory might be supposed to get its name as being a plant of special savour, but the name comes from its Latin name *Satureia*, through the Italian, *Savoreggia*. It is a native of the south of Europe, probably introduced into England by the Romans, for it is mentioned in the Anglo-Saxon recipes under the imported name of Savorie. It was a very favourite plant in the old herb gardens, and both kinds, the Winter and Summer Savory, were reckoned "among the farsing or farseting herbes as they call them" (Parkinson), *i.e.*, herbs used for stuffing. Both kinds are still grown in herb gardens, but are very little used.

Sedge.

(1) *2nd Servant.* And Cytherea all in Sedges hid,
Which seem to move and wanton with her breath,
Even as the waving Sedges play with wind.
Taming of Shrew (Introduction, sc. 2).

(2) *Iris.* You nymphs, called Naiads, of the winding brooks,
With your Sedged crowns and ever-harmless looks.
Tempest, act iv., sc. 1.

(3) *Julia.* The current that with gentle murmur glides,
Thou knowest, being stopped, impatiently doth rage;
But when his fair course is not injured,
He makes sweet music with the enamell'd stones,
Giving a gentle kiss to every Sedge
He overtaketh in his pilgrimage;
And so by many winding nooks he strays
With willing sport to the wild ocean.
Two Gentlemen of Verona, act ii., sc. 7.

(4) *Benedick.* Alas, poor hurt fowl! now will he creep into Sedges.
Much Ado About Nothing, act ii., sc. 1.

(5) *Hotspur.* The gentle Severn's Sedgy bank.
1st Henry IV., act i., sc. 3.

Sedge is from the Anglo-Saxon Secg, and meant almost any waterside plant. Thus we read of the Moor Secg and the Red Secg, and the Sea Holly (Eryngium maritimum) is called the Holly Sedge. And so it was doubtless used by Shakespeare. In our own day Sedge is confined to the genus Carex, a family growing in almost all parts of the world, and containing about 1000 species, of which we have fifty-eight in Great Britain; they are the most graceful ornaments both of our brooks and ditches, and some of them will make handsome garden plants. One very handsome species—perhaps the handsomest—is C. pendula, with long tassel-like flower-spikes hanging down in a very beautiful form, which is not uncommon as a wild plant, and can easily be grown in the garden, and the flower-spikes will be found very handsome additions to tall nosegays. There is another North American species, C. Fraseri, which is a good plant for the north side of a rockwork; it is a small plant, but the flower is a spike of the purest white, and is very curious, and unlike any other flower.

Senna.

> *Macbeth.* What Rhubarb, Senna, or what purgative drug
> Would scour these English hence ?
> *Macbeth*, act v , sc. 3.

Even in the time of Shakespeare several attempts were made to grow the Senna in England, but without success; so that he probably only knew it as an imported "purgative drug." The Senna of commerce is made from the leaves of Cassia lanceolata and Cassia Senna, both natives of Africa, and so unfitted for open-air cultivation in England. The Cassias are a large family, mostly with handsome yellow flowers, some of which are very ornamental greenhouse plants, and one from North America, Cassia Marylandica, may be considered hardy in the south of England.

Speargrass.

> *Peto.* He persuaded us to do the like.
> *Bardolph.* Yea, and to tickle our noses with Speargrass to make them bleed, and then to beslubber our garments with it and to swear it was the blood of two men.
> 1*st Henry IV.*, act ii., sc. 4.

Except in this passage, I can only find Speargrass mentioned in Lupton's "Notable Things," and there without any description, only as part of a medical recipe—"Whosoever is tormented with sciatica or the hip gout, let them take an herb called Speargrass, and stamp it and lay a little thereof upon the grief." The plant is not mentioned by Lyte, Gerarde, Parkinson, or the other old herbalists, and so it is somewhat of a puzzle. There is no Grass so named, but perhaps any Grass used to tickle the nose and make it bleed might have been so called. Steevens quotes from an old play, "The Victories of Henry the Fifth"—"Every day I went into the field, I would take a straw and thrust it into my nose, and make my nose bleed." Asparagus was called Speerage, and the young shoots might have been used for the purpose, but I have never heard of such a use, and Ranunculus Flammula was called Spearwort, from its lanceolate leaves. Mr. Beisly suggests the Yarrow or Milfoil, and quotes several authorities for the suggestion, but there seems no reason to suppose that it was ever called Speargrass, or could have been called a Grass at all. Dr. Prior suggests the common Reed, which is very probable; but I should be more inclined to suppose it to be one of the Horsetails (Equiseta). They are very sharp and spearlike, and their rough surfaces would soon draw blood; and as I find that a decoction of Horse-tail was a remedy for stopping bleeding of the nose, I should think it very probable that such a supposed virtue could only have arisen when remedies were sought for on the principle of "similia similibus curantur"; so that a plant which in one form produced nose-bleeding, would, when otherwise administered, be the natural remedy. The Horse-tails are, moreover, common plants which would be ready to hand for Falstaff's purpose.

Squash (See Peas).

Stover.

> *Iris.* Thy turfy mountains where live nibbling sheep,
> And flat meads thatched with Stover them to keep.
> *Tempest*, act iv., sc. 1.

In this passage, Stover is probably the bent or dried Grass still remaining on the land, but it is the common word for hay or straw, or for "fodder and provision for all sorts of cattle; from *Estovers*, law term, which is so explained in the law dictionaries. Both are derived from *Estouvier* in the old French, defined by Roquefort—'Convenance, nécessité, provision de tout ce qui est nécessaire.'"—Nares. The word is of frequent occurrence in the writers of the time of Shakespeare. One quotation from Tusser will be sufficient—

> If house room will serve thee, lay Stover up dry,
> And every sort by itself for to lie;
> Or stack it for litter if room be too poor,
> And thatch out the residue, nozing thy door.
> *November's Husbandry.*

H. N. Ellacombe.

(To be continued).

PLATE LXXXV.

TRITOMA (KNIPHOFIA) MACOWANI.

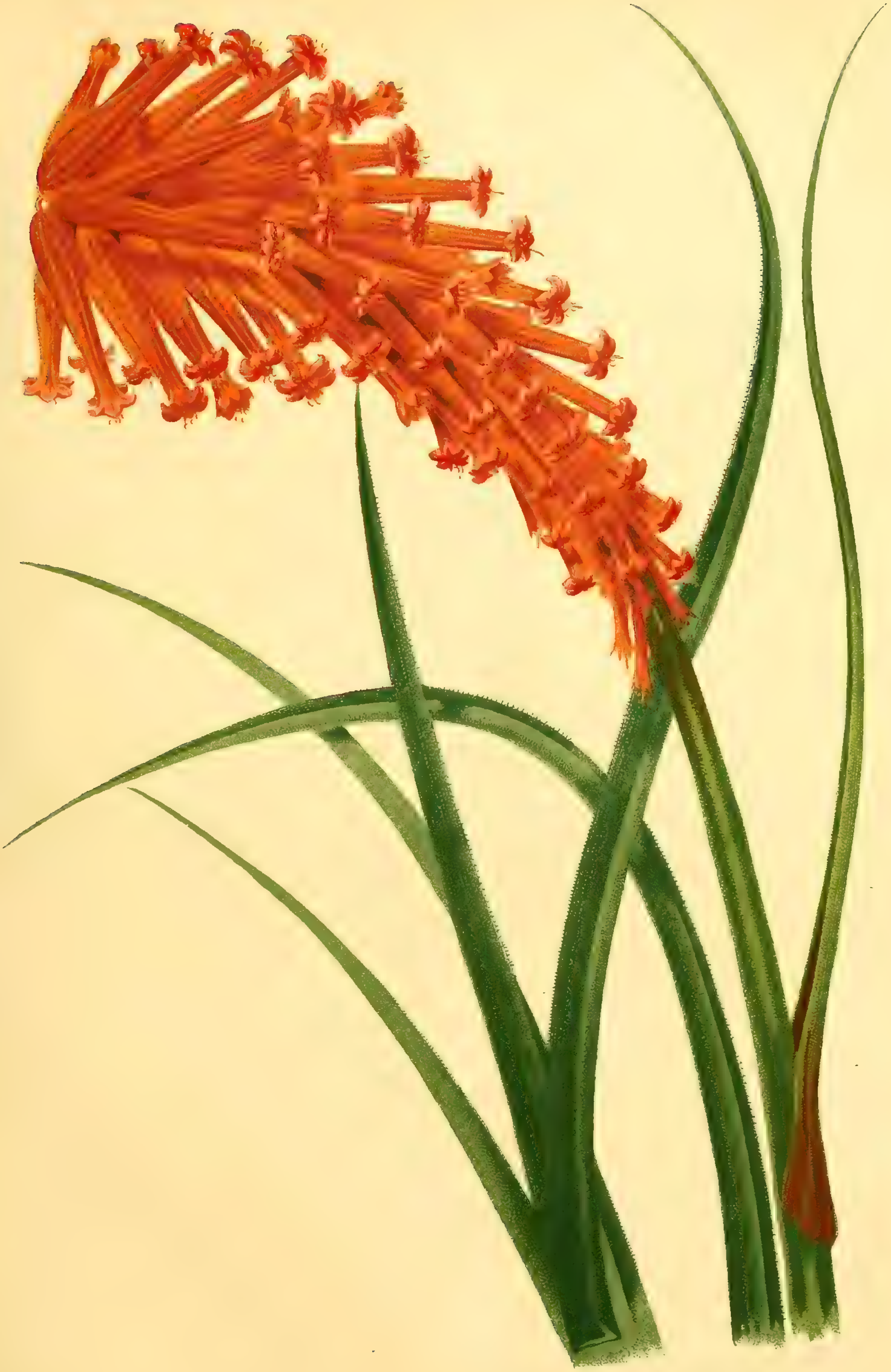
Drawn by H. HYDE.

This handsome species is only one of many recent additions to a most valuable African genus of hardy plants. It was originally described by Mr. Baker, early in 1874, in Trimen's "Journal of Botany," where he expresses a hope that it would soon be introduced into cultivation; but even at that date young plants of it existed in Mr. Green's Nursery, at Reigate. Mr. Baker's description was doubtless written some months before it was published, for in September of 1874 Mr. Green succeeded in flowering K. Macowani, and in the following October he showed a plant of it at South Kensington, for which he received a first-class certificate. Professor Macowan of Gill College, East Somerset, South Africa, discovered it growing on grassy slopes of the Boschberg Mountains, at an elevation of 4500 ft., and he sent seeds of it to Mr. Wilson Saunders, in whose garden at Reigate the plants were raised which afterwards came into Mr. Green's possession. This species is probably as hardy as its more familiar congener, K. aloides (better known to cultivators as Tritoma Uvaria), which was introduced into this country as long ago as 1707; or rather it was growing in Chelsea physic garden at that date. Moreover, our plant being of only about half the stature, it will find a place where K. aloides could not be employed. Whether like the latter it will flourish in almost any kind of soil remains to be seen; but as far as our knowledge of it goes, it cannot be too highly recommended. It is a very distinct species in a genus now numbering upwards of a score, and easily recognisable by the texture, strong veins, and distinct toothing of its rigid leaves. In the Linnean Society's Journal, vol. xi., Mr. Baker describes fourteen species—nine South African, and the remaining five natives of the mountains of tropical Africa. Of these the following from South Africa are, or have been in cultivation. K. sarmentosa (syn. Tritoma media, Bot. Mag., t. 744), which is like a miniature state of K. aloides, K. pumila, (Tritoma pumila, Bot. Mag. t. 764), also a small-flowered species of small size, readily known by the flowers being constricted above the ovary. K. præcox (Baker), "Refugium Botanicum" t. 168, and K. Cooperi (Lemaire), "Jardin Fleuriste" t. 362; both having leaves about 2 ft. long, and flower-scapes 12 in. to 18 in. high, short dense spikes, and scarcely exserted stamens. Subsequently Mr. Baker published, in the same place and at the same time as K. Macowani, six more species. Amongst them the fine K. caulescens (Bot. Mag., t. 5946): this also appears to be quite hardy. It was discovered by Mr. Thomas Cooper, in the Stormbergen Mountains, in the province of Albany, and sent home by him to Mr. W. W. Saunders. Mr. Baker says it is the most distinct of all the species of this intricate genus, having a decided stem to the rosette of leaves like a caulescent Aloe. It is also remarkable for its very broad, relatively short, very glaucous leaves. Of the few perfectly hardy plants we have from South Africa, that is, hardy in the sense in which Kniphofia aloides is entitled to be called, there are none more beautiful and requiring less attention than this species of Kniphofia. W. B. Hemsley.

Veronica Dabneyi.—This differs in colour from that of most of the species, having whitish or pink flowers, with the two uppermost petals pink inside. It is dwarf in habit, and sends up a copious supply of flower-spikes about 6 in. or 9 in. high. It is certainly fit for the mixed border, if for nowhere else.—J. F. R.

Bedding Tropæolum Bedfont Rival.—We find this Tropæolum to be excellent for bedding purposes. We have some lines of it that are a complete mass of bloom, quite outstripping Scarlet Pelargoniums this wet sunless summer; on several plants of it I counted over thirty flowers the other day, and the plants were only struck from cuttings early in May. It grows about 10 in. high, and the flowers are on regular-sized footstalks, and in colour a beautiful soft scarlet.—H. J. C., *Grimston.*

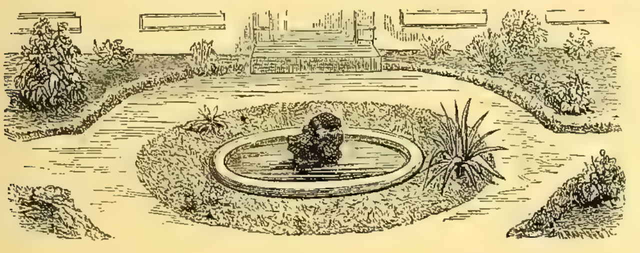
Gombo (Hibiscus præcox).—This is cultivated at Marseilles for its fruits, which are much appreciated by the Greek colony there. In Brazil (of which country Gombo is a native), not only are the fruits used as food, but the young shoots are eaten as a vegetable; from the older stems, cords and paper are manufactured; the seeds, too, have their use, being made into a kind of Coffee.—G.



THE DWARF FLAME FLOWER (TRITOMA MACOWANI - BAKER).

THE DEGRADATION OF WATER.

The annexed sketch faithfully represents one of the "ornamental" waters with which our French neighbours frequently deface their pretty little town and suburban gardens. If there be only a mere napkin of a lawn, it is sure to have a cemented tub placed in it; the Yuccas and the Grass, and the Thujas and the Cannas, all look happy as one expects them to be, but the whole is generally marred by the most ridiculous of fountain basins. If these could only be moved indoors, it would be a great relief to the travellers who have to deplore the diminutive washing-basins. As near as the writer can calculate he has seen between 7000 and 8000 of such saucers disfiguring as many pretty gardens in the neighbourhood of Paris. It is another evidence of the futility of forming artificial water in any form in the small garden: those who find gratification in surveying a tub full of unclean water should enjoy that in a more convenient place.



GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

August 6.—Sowing Mustard and Cress. Putting in a batch of Tricolor Pelargonium cuttings. Clearing off a piece of Turnips and forking the ground; also a piece of Strawberries, and planting the same with Coleworts and Couve Tronchuda Cabbage that had been previously transplanted. Tying Raspberry canes temporarily up to prevent the wind from blowing them about.

Aug. 7.—Sowing Chirk Castle Black Stone Turnips. Putting in Crystal Palace Gem and Ivy-leaved Pelargoniums. Lifting a piece of Gloucester Kidney Potatoes for seed. Planting a small border with Leeks. Staking William the First and Laxton's Unique Peas. Looking over Peaches and Nectarines and removing ties, nails, &c., where not required. Thinning Turnips and Spinach. Cutting Laurels overhanging walks, and hoeing and weeding between the same. Turning manure for Mushrooms. Watering Fig trees, Celery, Cardoons, Vegetable Marrows, and Cabbage Plants.

Aug. 8.—Planting a border with Endive and Lettuces; also Savoys for small green heads, and planting out the last batch of Melons. Putting cuttings under hand-lights of Viola Blue Perfection and Golden Gem. Layering Strawberry runners on square pieces of turf, in order to obtain plants for a new plantation. Thinning, weeding, and hoeing Turnips. Giving Fig trees a good soaking with water. Pruning Apple and Pear trees.

Aug. 9.—Sowing Early White Naples, Giant Rocca, and Giant White Tripoli Onions for spring use; also Fraser's Broad-leaved and Green-curled Endive in well-watered ground. Putting in cuttings of Coleus and Centaurea. Potting Campanula pyramidalis, and also C. calycanthema. Stopping shoots of Tomatoes, and exposing the fruit to the full force of the sun. Digging heavily-manured ground for Endive and Lettuces; lifting Porter's Excelsior and Scilly Red Potatoes. Watering Peach-houses and late Vinery borders.

Aug. 10.—Sowing Early London, Large Asiatic, Walcheren, and Veitch's Autumn Giant Cauliflowers. Potting Queen Pines in peat, loam, and rich bones, emptying the pit and rearranging the plants. Earthing-up Celery, Cardoons, and Leeks. Hoeing amongst Gooseberries and Currants. Gathering Green Gage Plums for preserving. Watering part of the Pines, also Celery and Cabbage plants. Fruit in use for dessert:—Pines, Melons, Grapes, Figs, Plums, Cherries, Pears, Apples, Gooseberries, and Currants.

Aug. 11.—Sowing a few pots of Mignonette, and also a border of Turnip Radish. Clearing off Peas that have ceased bearing. Picking over and weeding carpet beds. Mowing and cleaning in the pleasure grounds, and weeding and cleaning gravel walks in kitchen garden.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Epiphyllums that have made their growth, both of the truncatum and larger-growing kinds, will be benefited by being placed out in the open air on the south side of a wall fully exposed to the sun. If ranged in a row as near the wall as possible, so that the sun's rays act directly upon them, combined with the heat radiated from the wall, that will form the nearest approach to the dry, roasting process they undergo in their native habitats, and will greatly increase their flowering abilities; many of the stronger-growing kinds producing double the quantity of flowers when so treated than when kept under glass all through the summer, where they have a tendency to continue growing rather than to get fully matured. Whilst they are out-of-doors in this way they should receive no more water than will just keep them from shrivelling.

Large-flowered Pelargoniums turned out in the open air a short time since should be cut back; previous to which allow the soil to get moderately, but not quite dry. The roots of these plants cannot bear any excess of moisture, and if headed down with the soil in a wet condition they generally rot to such an extent as to injure materially the succeeding year's growth. When cut back the plants should be stood in a cold frame or pit, fully exposed to the light and syringed overhead every afternoon, shutting up the frame at the same time, which will accelerate the breaking of the buds; give them plenty of air during the early part of the day. Fancy Pelargoniums must be similarly treated as to the condition of the soil before the heads are reduced; but, as previously recommended, they must not be cut in nearly so close as the large-flowered kinds, only removing about one-half the current season's growth, and being particularly careful that the plants do not get too much wet after heading in. If any aphides be molesting them at the time they are cut down, they should be twice well fumigated at an interval of ten days—the foliage being in a hard mature condition they will bear a strong application of smoke; lay them on their sides and syringe freely with clean water after smoking. Cuttings of any varieties that it is deemed desirable to increase may now be put in; the tops severed from the points of the shoots with three or four joints each will generally strike and grow more quickly than cuttings from the harder portion of the shoots, although the latter will strike; there is no more convenient way of treating them than inserting six or eight in 6-in. pots, well drained and filled with a mixture of half sandy loam, plunging the pots in a bed of ashes fully exposed to the sun in the open air, where they may remain for a month or five weeks, watering as required in dry weather; so treated they are much less liable to damp off than when shut up in frames.

Primulas, sown early, potted off some time back, and put into cold frames facing the north with some hexagon netting over them for a few hours in the middle of the day, must be kept close to the glass, otherwise they will become drawn and weak, and when this occurs they are much more liable to damp off through the winter; and by no subsequent treatment can they be induced to flower so well as those plants that have made short stout sturdy growth. Give them abundance of air at all times, and when there is no appearance of rain, leave the lights off during the night, at which time the dews have a most beneficial effect upon them.

Veronicas grown in pots for autumn flowering, and now plunged out-of-doors require an abundant supply of water, especially when the pots are filled with roots: if they suffer for lack of moisture the bottom leaves will turn yellow, which gives the plants a most unsightly appearance; they should be turned round once every few weeks to prevent the roots protruding through the bottom growing into the surface soil.

Solanums grown in pots must be similarly treated, with the addition of having the whole of their leaves freely syringed once a week to keep down red spider: both the Solanums and the Veronicas are better planted out in the summer, and taken up and potted about the beginning of September; so managed they make better growth, producing their berries and flowers respectively freer, the leaves always having a more vigorous, healthy appearance; they are also not so subject to the attacks of insects, and require much less attention generally.

Chrysanthemums now plunged out-of-doors should at once be staked and tied; if this work be neglected, the considerable growth which they have made will endanger their being broken by the wind. For decorative purposes I should not recommend amateurs to tie them out to the flat shape as usually seen when exhibited, for although that form displays the flowers in the most prominent position, it is objectionable on account of giving them an unnatural appearance, and when blooming (which they do at a time when greenhouses are the most crowded) they occupy too much room. Eight or ten sticks to each plant, in order to support the branches and keep them sufficiently open for the admission of light and air, will be quite sufficient. I should recommend the use of dry willow in preference to deal sticks either painted or unpainted, on the score both of appearance and economy. The plants should now be syringed overhead every afternoon when the weather is dry; this not only assists growth, but if persevered with will prevent their being troubled with aphides; should these already affect them, syringe with Quassia or Tobacco-water until they are destroyed. The plants must be regularly and liberally fed with manure-water. By the old treatment, viz., of not giving manure-water till after the flowers were formed the blooming capabilities of Chrysanthemums were never fully brought out. They are the grossest-feeding subjects cultivated in pots, and will bear liquid manure stronger and in greater quantities than anything else.

Gooseberries and Currants.—Where these are grown on walls, especially such as have an eastern, western, or northern aspect, a few trees of the different kinds should not have their fruit gathered, and should be netted to keep off birds, which generally attack them as soon as the fruit in the open quarters is scarce. So grown Gooseberries and Currants, particularly the latter, may be kept for a long time beyond their usual season, as on walls they are greatly protected from rain, in the absence of which Currants will keep on the trees in good condition for a couple of months or more after they are ripe. Gooseberries in the open quarters may also be preserved for a considerable time by covering the trees with bast mats, in order to keep out birds and throw off the wet. Amateurs will find the trouble involved in these matters well repaid, especially in a season like the present, when there are so few Plums, early Pears, or Apples. The ground amongst bush fruits should be regularly hoed over at intervals of a few weeks to keep down weeds, which will grow apace after the recent rains.

Carrots.—Where the land is tolerably dry, and of a porous character, favourable for the production of good Carrots, a little seed may be put in now to stand over the winter for spring use; these will not be liable to run to seed so soon in the spring as those that were sown a fortnight earlier; they come in very useful, being plump and fresh after the stored Carrots become stringy and tough. The ground ought to be well dug, breaking it fine to the full depth it is moved; sow thinly in rows 1 ft. apart.

Turnips should be sown immediately wherever ground can be cleared from the early crops. At this time of the year showery weather should always be taken advantage of to sow the seed whilst the surface is moist, as a few days' sun and wind make it too dry for them to vegetate freely.

Onions.—A piece of ground should at once be dug whereon to sow winter Onions; the place selected should be where it is tolerably dry through the winter, in which case, if the season be wet, they are much more likely to succeed. The time for sowing this crop should be varied quite a fortnight in different parts of the kingdom; in late backward districts in the north, if it be deferred too long, the crop does not attain its full size the ensuing summer; in the southern parts, if sown too early, considerable numbers run to seed; consequently the beginning or middle of the month for the later districts, and towards the end in early situations, will be the best. In cold, bleak places, the White Lisbon is suitable, being very hardy; it is one of the best for using in spring in a small state. In addition to the Globe and Flat Tripolis, generally grown for making large bulbs for summer, the Giant Rocca is also an excellent kind, as, when well cultivated, it attains a large size and is particularly mild. Dig the ground deeply, and select if possible a piece that has been well manured for the spring crop, which will be better for the Onions than if applied at the present time. Winter Onions, like most other things, are unusually late this year, and in most places are only just completing their growth; they should now be taken up and dried. It is necessary to handle them very carefully, as if bruised in the slightest degree, they will decay, being much more liable to suffer in this way than spring-sown kinds.

Parsley.—Where this has been well grown by sufficient thinning so as to give it plenty of room, it will from this time increase rapidly, and bear much more frost than when in the insufficiently-thinned, overcrowded state the crop is too often permitted to remain; if it have been neglected in this way, it will be advisable to transplant a portion to newly-dug ground, inserting the plants 9 in. apart, making the hole with a planting trowel or dibble, pressing the soil quite firmly to them, and giving water as the state of the weather may require until growth has commenced.

Endive and Lettuce.—A little more Endive, as well as Cos and Cabbage Lettuce should be sown; thin out the plants that have been sown in rows where they are to be grown. Where these are at all likely to be deficient for the supply some may be planted, as they will not be apt to run to seed after this time. As soon as the plants are large enough to handle some of the earliest-sown Endive should be planted; the land for these can scarcely be too rich. They should be well attended to with water until they have got fully established, for if their growth be much checked, the plants from this early sowing are liable to run to seed.

Herbs of all kinds that are grown for drying should be cut as they come into flower; they ought to be spread out thinly in an airy shed, without being exposed to the sun.

Hardy Flowers.

Calceolarias.—Seed of these should now be sown without delay. The Calceolaria is not a hardy flower in the ordinary acceptation of the term, but nevertheless it may be included under that head, as it is a plant which nearly every one grows. Seed of it can be raised with but little trouble; an acquaintance of mine raises both it and his Cineraria seed by scattering it on the floor of a small cold frame at the front of a north house—a frame in which hardy plants are wintered. It is cleared in July; a little fine sandy soil is strewn over the ash bottom, the seed is sown thinly on it, the lights are shut down, and an excellent crop of plants is the result. Early sowing is to be recommended, because it is a great advantage to have strong plants in the autumn, and so ensure an early bloom. Late-flowering plants are rarely satisfactory. Those who sow seed in pans should put some rough peat and loam at the bottom, and cover it with a fine surface soil, which should be pressed gently down; then sow the seed and do not cover it. Place a piece of glass over the pan and shade it, keeping the soil cool and moist, and when the seed begins to vegetate, sprinkle a little silver sand over it. Shrubby Calceolarias can be wintered in a cold frame by pulling the plants to pieces and pricking out the shoots like cuttings; they will all root if kept close. To winter the plants effectually the frame should be placed above the level of the ground, so as to have the bed as dry as possible.

Carnations and Picotees.—Those who are hoping to get exhibition flowers up to the middle of August—and in Lancashire and other northern districts there are but few yet open—will need to watch the flowers attentively, in order to see that the pods do not burst, as a burst pod is a disqualification on the exhibition table. Those plants that are grown for border purposes may be left to themselves, but it is well to tie a piece of matting round the pods if good symmetrical flowers be required. There are some very fine Clove Carnations that make capital border flowers if they be selected for their robust growth and free flowering properties. One in particular may be mentioned—a large, bright, fleshy, rose-coloured variety which originally came from Russia; it is very free, and a remarkably vigorous grower. Layering should now be commenced; make a clean incision about the third joint and peg them down tightly into some light sandy soil, sprinkling with water occasionally for a few days.

Pinks.—Rooted pipings should be potted off as fast as necessary, and kept in a cool frame for a time till planted out. Such forcing varieties as Mrs. Pettifer, Lady Blanche, Lord Lyon, and coccinea, should be grown on in pits to get well established by the end of the summer. Those who grow Pinks in beds should commence the work of getting them ready for planting out in autumn, digging in a good supply of manure and leaf-mould, so as to get a light, free soil. The bed should be dug and turned over occasionally to sweeten and pulverise.

Ranunculuses.—Early-flowered Ranunculuses may now have their roots taken up and put by for the winter. If the roots be lifted and put away in a dry cool place in paper bags, they will keep plump. Around London large beds of the old scarlet Turban Ranunculuses are much grown for cutting from for market: and there its cultivation may be said to begin and end. Every bulb list contains some named Ranunculuses, and then what is known as the superfine mixed Persian contains varieties of considerable beauty, the best of which could be selected for making a choice bed. Those who grow Ranunculuses, if they wish to have good flowers, should plant them in a well prepared bed; and after the roots are lifted, it will do the bed good to turn it in a dry state, and give it a good coating of manure.

Violas.—Plants that are now beginning to fade will be much helped by cutting them over, giving them a good soaking of water if the weather be dry, and top-dressing with some refuse soil from the potting bench. A new and profuse growth will spring up, which will not only yield stock for cuttings, but flowering wood also. Some of the tops that are cut away in this manner will make good cuttings, and if they be put in a shady place will readily strike. Among new varieties that are well adapted for bedding purposes Vestal takes a high place. It gives us what has long been wanted, a thoroughly good bedding white Viola. The flowers are pure in colour, of good shape, freely produced and well above the foliage; the habit, too, is free and branching, and altogether it is superior to the white varieties in cultivation. Vestal is very fine just now in the Gardens of the Royal Horticultural Society at Chiswick.—D.

Indoor Fruit Department.

Pines for the winter supply in many cases will be past their blooming period, and swelling rapidly; let their wants be steadily supplied by watering them regularly, and examine them minutely twice a week; weak guano water may be used at any time. Maintain a bottom-heat of 88°; shut up with sun as early as possible with safety to the plants, allowing the temperature to run up in the afternoon to 90°, with abundance of moisture in the house; bedew the plants freely but lightly every fine afternoon, and where it is necessary to encourage growth damp well all available surfaces. If the crowns become proportionately large for the size of the fruit, and the houses are placed in shady positions, withhold moisture to a certain extent. When the fruit is ripe keep up a dry, warm air, by making the ventilation somewhat freer; and where necessary to retard the fruit, remove it to a Vinery where the fruit is ripe or gathered, maintaining therein a steady, cool atmosphere. Queens for early work next year should have their pots well filled with roots by this time, and the bottom-heat should not exceed 83°, with a night temperature of 70°, being 5° less than for plants in active growth. Prevent overwatering, but at the same time do not allow them to become too dry; if so they will be likely to push their fruit, which renders the plant useless at this particular period of the year. Where a second lot of Queens are required, these should be encouraged to grow for some time, and managed as already directed. Suckers from plants from which the fruit has been cut should be placed in 6-in. or 8-in. pots, drained in the usual way, using the strongest suckers of Smooth Cayennes, Jamaicas, Rothschilds, or other late sorts; but in the case of Queens, if too early, they frequently throw up in the autumn, which renders them useless, as already stated. Keep the sucker frame close, shade during strong sunshine, and sprinkle frequently, when they will soon root at this early season; gradually reduce the shading, water sparingly for a time until the roots get into action, when they should be kept in a moderate condition, and shifted on as the roots become slightly coiled round the ball. Let the drainage be perfect; the compost should consist of turfy loam that has been stacked for a time, with a fair sprinkling of bones and soot mixed when dry, and rammed firmly with a blunt-ended piece of wood. Keep the houses or pits clear and light, and thus prevent the plants from becoming drawn before winter.

Vines.—Where early Vines are exhausted, and it is intended to replant them, a year's growth will be nearly gained by commencing at once. Plant young Vines from eyes this year; and if free-growing plants be at hand, extricate the points of the roots, with as much earth adhering as possible, and they will root freely and readily, giving them late in the autumn plenty of fire-heat with a free circulation of air. Such canes will produce four bunches of good Grapes the following season if allowed to start themselves. Water with tepid water, and top-dress to prevent evaporation. Keep the house close for a time, and shade the Vines during bright sun, when growth with renewed vigour will soon take place, and the shading may be gradually withheld. See to Grapes swelling off on Vines where the borders are raised or subject to become dry through position. Mulching should be done immediately, and watering twice a month in this stage is requisite. Where the Vines are in a state to receive manure-water, now is the time to apply it—guano may be safely used at every watering. Keep up a brisk temperature, and assist sun-heat by fire in cold localities. Where colouring has not taken place, do not let the temperature fall below 70° with a circulation of air; where such treatment is rigidly followed, red spider seldom puts in its appearance, but should this unwelcome pest arrive, hand-washing is the best means of removing it. Mildew is of common occurrence this year, and where it makes its appearance increase the temperature 5°, with a freer circulation of air; withdraw the water from the evaporating troughs, and allow the interior of the house to become drier; sulphur the pipes and dust sulphur on the bunches and leaves most affected. Mildew makes rapid progress, and on its first appearance should be treated as described. We have tried every remedy prescribed for it as a means of testing the result, and find the old cure the best. Keep ripe Grapes cool and airy, and whenever cut use the syringe freely to keep the foliage clean, and to assist in retaining it as long on the Vines as possible. Examine the fruit to prevent decay by water lodging on the bunches or otherwise. Where Grapes are intended to hang until the spring, thin the berries at once. Pinch out superfluous growths, but allow the Vines to carry sufficient foliage to keep them in robust health; where overcrowding does not take place, the foliage will improve the plants. In the case of early pot Vines which are intended for early forcing next year, their canes will be ripening, and should not be allowed to make any more lateral growths. Retain them in a light airy position, where the ripening process may be assisted, so as to admit of a long rest. Early and well ripening is of the greatest importance in pot Vines. —J. Hunter.

HARDY FLOWERS OF THE WEEK.

The late rains have been very favourable for hardy perennials, many of which are now in excellent condition. Campanula Hendersoni is a fine plant, apparently a hybrid between C. turbinata and C. fragilis; it grows from 15 in. to 18 in. in height, forming a pyramid of erect, deep blue, salver-shaped flowers. C. (Platycodon) autumnalis, one of the best of our autumn-blooming perennials, will continue in flower for five or six weeks; it is distinct from C. grandiflora, flowering much later, being more erect in habit, and taller; its flowers vary from white to blue, both single and double. Anthericum graminifolium forms a bush 3 ft. in diameter composed of erect, slender, branching stems, smothered with white flowers; A. Huteri, only 1 ft. in height, is somewhat similar in character, but has flowers double the size of those of the preceding. The Giant Thrifts are still very showy, and will continue so for at least another month; they began to flower in the latter end of May. The best of the group are Armeria alpina grandiflora, A. cephalotes rubra, A. plantaginea rosea and rubra, and A. mauritanica — all distinct and good perennials. Amongst Foxgloves in bloom may be mentioned Digitalis lutea, which has spikes of small yellow flowers; D. ochroleuca, large pale yellow; and D. (Isoplexis) canariensis; the latter scarcely hardy. Lysimachia Ephemerum forms fine clumps 3 ft. in diameter, composed of numerous stiff spikes thickly beset with white flowers having purple anthers; but the best of this family now in flower is L. clethroides, a kind having drooping spikes of white flowers of a peculiar character; both are useful plants for a damp, shady border. Stobæa purpurea, a curious Thistle-like plant, is now in bloom; it has large, lilac flowers splashed with purple. Jaborosa integrifolia is also flowering freely, and its blossoms are fragrant and last long in perfection. Verbascum pyramidale is producing spikes 3 ft. in length; V. nigrum has deep golden-yellow flowers, and is bold and striking in appearance. The double Sneezewort (Achillea Ptarmica) is a good plant, and its pure white and very double flowers are useful in a cut state. Among early-flowering Asters are A. pyrenaicus and A sibiricus, both dwarf and sturdy, bearing large heads of light purple flowers 2 in. across. Helonias erythrosperma has peculiar greenish-white flowers on branching spikes 18 in. in length; it is not a showy but an interesting plant. Pentstemon Richardsoni is somewhat

Kaulfussia amelloides var.

shrubby, bearing an abundance of rosy-purple flowers. P. cordifolium, an evergreen species with deep red flowers, is hardy in warm, sheltered situations, especially on the south coast. Several of the Sages are in flower; Salvia taraxacifolia, a dwarf rock plant, is not showy by any means, but interesting; the white variety of S. patens and S. dulcis are also in full flower. Wyethia arizonica is a good yellow Composite, but is completely eclipsed by Coreopsis lanceolata and tenuifolia, which form large bushes smothered with golden-yellow flowers. Echinacea angustifolia and purpurea are both good plants with large purple flowers on stems 3 ft. in height. Viola gracilis, deep purplish-blue, is pretty, and so are many of the dwarf Statices, which are now flowering freely. Acanthus latifolius, now in bloom, forms a stately plant for isolated positions on the lawn. The blossoms of Agapanthus umbellatus and its white variety are beginning to expand, and so are those of the lovely twin-flowered Bravoa (B. geminiflora), which bears spikes of Pentstemon-like flowers. Brodiæa grandiflora, deep lilac; Zephyranthes sulphureus, pale sulphur; and Cyclamen europeum, red, are all at present finely in flower. Tropæolum speciosum is just opening. What a grand plant this is where it does well; a cool shady spot is what it requires. Convolvulus Scammonia is another good climber which produces abundance of white flowers; last year it was in bloom in December. Many of the Lilies are now in good condition, especially those belonging to the longiflorum section; Takesimæ, Wilsoni, and Liu Kiu are three distinct varieties; chalcedonicum and its varieties are also in flower, and their fiery scarlet blossoms can be seen at a great distance; L. armeniacum, a variety of elegans, with large heads of erect flowers of an apricot-orange, is very distinct, and a good showy Lily; L. tigrinum, L. superbum, and L. auratum are fast opening. L. philadelphicum, L. canadense, and L. Krameri are still in flower, although past their best: while L. Humboldti and its variety Bloomerianum are still in perfection. What could be more beautiful for a quiet cool bed than the common Calla, C. æthiopica, planted in March or April in a dry state? It will flower luxuriantly during July and August, and from the moment it issues from the ground it has a pleasing appearance, which it retains until cut down by frost. If planted in a moist, shady bed, it will flower even as late as September, and produce luxuriant foliage from 3 ft. to 4 ft. in height. Arum albo-maculatum is still more interesting; its rich olive-green foliage, smothered with conspicuous white spots and crowned with creamy-white spathes, renders it attractive, and it is a plant which ought to be grown extensively for summer decoration. Calandrinia umbellata is now one mass of vermilion flowers, so dense and bright as to be perfectly dazzling. It has only one failing, and that is, it will only open during full sunshine. What a glorious plant for old walls, ruins, and similar situations, in which few plants will thrive. The new Musk, Mimulus moschatus Harrisoni, is likely to prove a valuable plant for summer decoration. It flowers freely in hot, dry situations; and as the blooms are large, bright, and continuous, it must be regarded as a valuable addition to summer bedding plants. Sparaxis pulcherrima is now flowering freely, forming a graceful object in the border among other hardy plants. The foliage is about 4 ft. in height, very slender, rising erect from the root, and then drooping gracefully. The flower-stems rise well above the foliage, and bear large, variously-coloured blooms; when they have become thoroughly established they form magnificent clumps, producing forty, and in some instances as many as fifty spikes of flowers upon a single plant. They will thrive in any friable loam, in almost any situation; are perfectly hardy, and easily propagated. Several of the Californian Pentstemons are very pretty; P. centranthifolius and P. heterophyllus are two of the best. Among Lilies the Californian varieties are the most prominent; of Humboldti there are numbers in the open ground 5 ft. high, with over a score flowers on each; Robinsoni, pardalinum, and several others of this group, are still in flower. The different varieties of L. canadense are very showy; L. longiflorum and its varieties, excelsum and Browni, and the different kinds of L. elegans are also good, and invaluable for the decoration of the flower garden during July. P.

Dwarf China Aster (A. sinensis multiflorus).

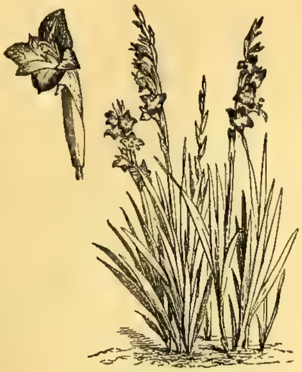
Leptosiphon luteus.

Common Sunflower
(Helianthus annuus).

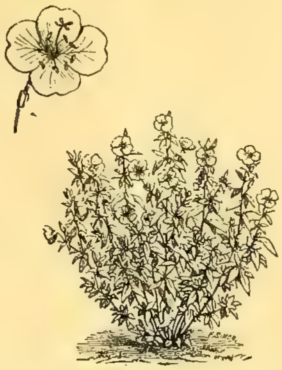
Californian Double Sunflower
(Helianthus annuus var. californicus).

Iris Kæmpferi.—I have raised this from seed which I brought from America, and I have numbers in bloom; one flower which is before me as I write is excellent as regards colour, and measures fully 7 in. in diameter.—C.

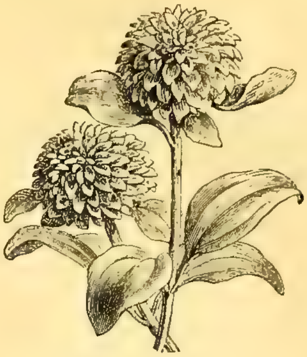
Lee's Prolific Currant in America.—Among the new fruits on trial this year we notice an especially fine crop on the Lee's Prolific Black Currant, imported a year ago last spring from England. The fruit is at least half larger than the Black Naples in an adjoining row, and treated precisely the same; the stems are very long and full, and the amount of fruit astonishing. It is evidently a profuse bearer, and the quality superior that of any other Black Currant grown.—"Country Gentleman."



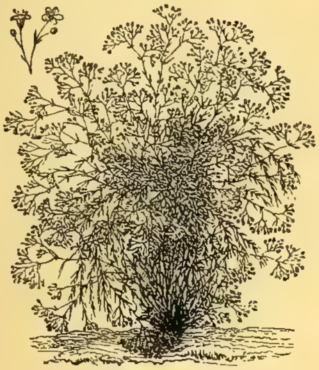
Gladiolus psittacinus.



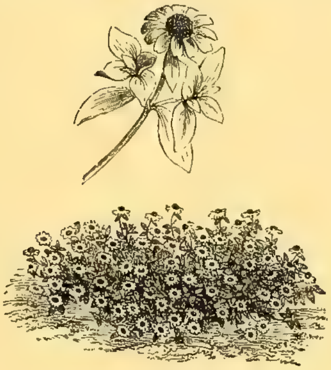
Late-flowering Evening Primrose (Œnothera serotina).



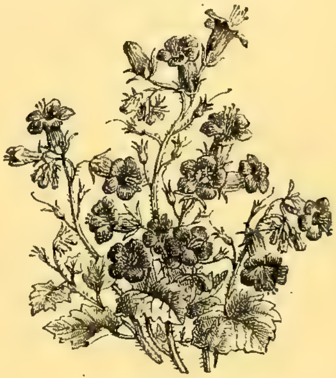
Sanvitalia procumbens fl.-pl.



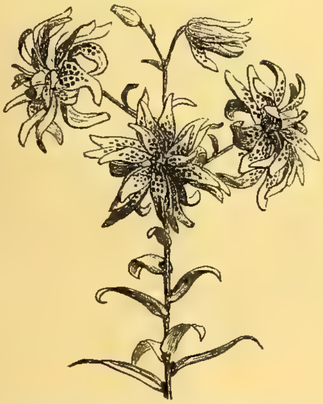
Gypsophila paniculata.



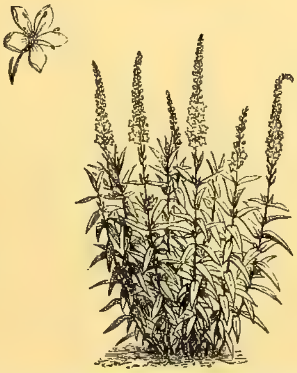
Sanvitalia procumbens fl.-pl.



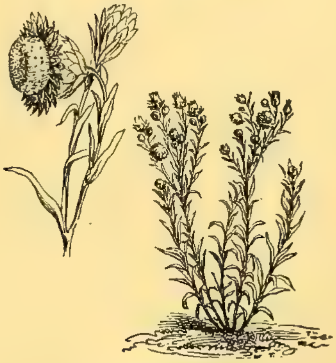
Whitlavia grandiflora.



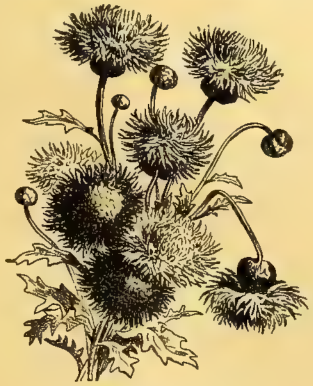
Double Tiger Lily (Lilium tigrinum fl.-pl.)



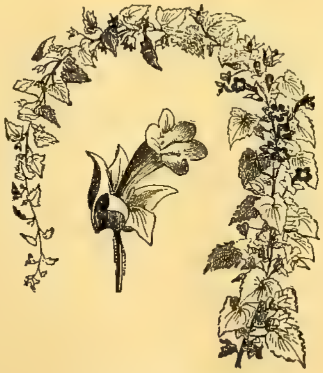
Willow-leaved Loosestrife (Lysimachia Ephemerum).



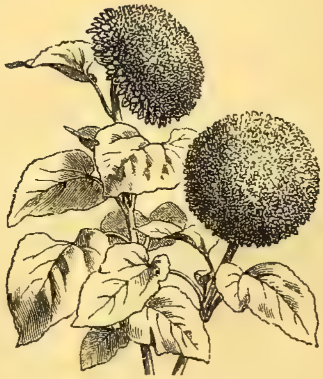
Waitzia aurea.



Centaurea suaveolens.



Lophospermum scandens.



Double Sunflower (Helianthus annuus fl.-pl).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

THE FRUIT CROPS.

SCOTLAND.

Drumlanrig, Thornhill, Dumfriesshire.—Hardy fruit crops here are not very satisfactory. Last winter was one of the mildest ever experienced, the spring the coldest on record, and contrary to what was at one time anticipated, vegetation was very backward at the end of May. Of summer weather there has not been any except a few days towards the end of June. Since then I do not think there has been ten hours' continuous sunshine, and heavy cold rains have been the rule. At present vegetation is quite three weeks behind, and the weather wet, cold, and gloomy. We gathered the first Strawberries for preserving yesterday (July 18), in a very unsatisfactory condition. In the average of seasons they are generally over by this date. Of Apples there are what would make a very fair crop on the trees, but being so late, unless the autumn proves exceptionally fine, they will be next to worthless. The sorts that do best here are Lord Suffield, Stirling Castle, Blenheim Pippin, King of the Pippins, Bedfordshire Foundling, the round and ordinary Catshead, and a variety under the name of Croftaury: these seldom miss a crop even in this climate. Of Pears we have none, and very few trees yet in bearing condition. Plums irregular. Peaches none. Apricots none grown. Cherries a poor crop. Raspberries a great crop. Gooseberries thin. Currants (except the Black) good. Strawberies a heavy crop, but rotting instead of ripening. The leafage on forest trees and indeed all hardy plants is wonderfully fine, owing to its being so unusually late, and thus escaping spring frosts.—David Thomson.

Marchmont House, Dunse, Berwickshire.—The long and continuous wet autumn of 1876 and the want of sunshine have been the chief causes of failure in the fruit crops this season. Everything, too, is quite a fortnight later than usual. Apples and Pears are only middling crops. Early Plums are plentiful, but of late kinds we have none. Cherries are about half a crop. Gooseberries not half a crop, in some districts none. Currants (Red and Black) abundant, White medium. Raspberries plentiful but very late. Strawberries about half a crop, late varieties best. Nuts are a fair crop. Fruit as well as forest trees are growing luxuriantly, 4·44 in. of rain having fallen during the first seventeen days of July.—Peter Loney.

Bothwell Castle, Paisley, Lanarkshire.—Excepting Strawberries, Currants, and Gooseberries, the fruit crops hereabouts are greatly below the average. Wall Peaches and Green Gage Plums are almost an entire failure; standard Plums, of which there are a good many in this district, are quite a failure. Apples are very irregular, some trees being loaded with fruit and many bearing no crop at all; Stirling Castle and Lord Suffield are more planted here than any other sorts, and that is the case taking the west of Scotland generally. Gooseberries are largely grown in this locality; they were sold by auction very recently, and realized much higher prices than usual.—Andrew Turnbull.

Dalkeith Park, Midlothian.—Fruit in this locality is a good average crop, except Peaches and Apricots on the open walls, which were much injured by the severe weather in April and the first half of May. Since the middle of May the weather has been generally favourable. Apples and Pears are a fair crop and swelling off satisfactorily, the trees being healthy and freer than usual from insects. Plums and Cherries are a good crop. Gooseberries partial; in some places a very heavy crop, in others scarcely any. All sorts of Currants, Strawberries, and Raspberries are a heavy crop, if we only get dry and warm weather to ripen them; at present the very wet weather is much against them. Potatoes look well, and no disease has yet appeared. All crops are fully a fortnight late at present.—M. Dunn.

Tyningham, Prestonkirk, East Lothian.—Apricots are a fair crop, but the trees are much damaged by the cold east winds which we had in spring. Apples flowered abundantly, but the majority of the blossoms were imperfectly developed, and consequently a middling crop only is the result. Pears, Plums, Cherries, and Gooseberries are scarce, the buds of the latter having been eaten in winter by small birds. Currants of all kinds are most abundant, as are also Raspberries. Strawberries are unusually plentiful, but the damp weather which we had lately and the excessive rainfall which we now experience will make the crop ultimately anything but a large one. Peaches are almost entirely under glass, and are an average crop. Early Hamburgh Grapes have been as a rule poor in this district, but taking the crops as a whole, they will be good. Kitchen garden crops are in general from three to four weeks later than usual; heat is all that is required now to ensure good late crops.—R. P. Brotherston.

Eglinton Castle, Ayrshire.—Fruit trees when in blossom promised to yield heavy crops, especially of Apples, but a general failure took place during the period of setting. In some districts of this county there are no fruit, in others a medium crop, and only in one or two instances is there a full crop. The following is a fair return:—Apples and Pears below the average; Plums very scarce; Peaches, none outdoors; Apricots do not succeed outdoors, except in sheltered situations; Cherries a middling crop; Gooseberries in some places an average crop, in others scarce; Currants below the average, especially Black; Raspberries and Strawberries abundant. The following are the best varieties of fruit for this country, viz.:—Dessert Apples—King of Pippins, Cambusnethan Pippin, Kerry Pippin, and Thorle. Kitchen sorts—Lord Suffield, Ecklinville, Stirling Castle, Bedfordshire Foundling, and Wellington. Dessert Pears on walls—Louise Bonne of Jersey, Marie Louise, Jargonelle, Beurré de Capiaumont, and Beurré Diel. Standards—Hessle, Moorfowl Egg, Doyenné Boussoch. Plums on walls—Jefferson, Kirke's Seedling, Green Gage, Purple Gage, Magnum Bonum, and Victoria. Standards—Victoria. Strawberries—President, Keen's Seedling, Elton Pine, and Vicomtesse Héricart de Thury. Ayrshire generally is a bad fruit-producing county, being very subject to late spring frosts and long, continuous, easterly winds during April, May, and June.—John Gray.

Culzean Castle, Ayrshire.—Our fruit crops this season are not good; all small fruits, except Gooseberries, have been about an average, but Pears, Apples, and Plums are very scarce. The following are a few varieties that bear well with us in general, viz.:—Plums—Victoria, Kirke's Blue, Rivers' Early, and Jefferson. Pears—Williams' Bon Chrétien, Beurré Diel, Knight's Monarch, and Ne Plus Meuris. Apples—Ecklinville, Lord Suffield, King of Pippins, Monk's Codlin, Keswick Codlin, and Royal Russet.—D. Murray.

Blythswood, Renfrewshire.—Fruit crops in this vicinity are nearly a failure. Peaches are very thin. Of Apricots we have none. Plums are better, but not a full crop. Of Morello Cherries we have a fair crop. Pears on walls are quite a failure, and Apples and Pears on standards are very thin; sorts that for years past have always yielded at least part of a good crop are without a fruit. Small fruits are plentiful. Strawberries are most abundant, and fine. Gooseberries a full crop with us, but in some places they are but half a crop, and in others there are none. Currants, Red and White are also fine. Black Currants are not abundant, a circumstance which I attribute more to disease than to the weather. Raspberries are a full crop. We are much in want of sunshine and dry weather to ripen the fruits.—John Methven.

Dupplin Castle, Perthshire.—Fruit crops hereabouts are very poor indeed. The bloom was most abundant; but the months of April and May being excessively cold, it did not set. Apricots here are a scarce crop, the Kaisha being the only sort that is bearing any fruit. Apples I expected would have been a heavy crop, but here we have only Lord Suffield and Cellini bearing full crops. Pears are also under the average. Amongst Plums Victoria and Jefferson are the only sorts that are bearing full crops. Strawberries are most abundant, but greatly spoiled by wet. Other small fruits are bearing fair crops, but very late. Peaches are not grown out-of-doors here. —John Browning.

Fordell, Inverkeithing, Fifeshire.—Small fruits, such as Strawberries, Gooseberries, and Currants, are a plentiful crop hereabouts. Cherries on walls are a fair crop, but Peaches are nearly a failure, the foliage having suffered severely from blister. Apricots in some situations are abundant, but about three weeks later than usual. Plums in general are rather a thin crop, and the finer sorts, such as Washington and Green Gage, are almost a failure. On the Belgian and French sorts of Pears there is but a thin sprinkling, but on some of our old sorts there is a fair crop; we have an old Moorfowl Egg on a west aspect showing a good crop, making the fiftieth crop which it has produced while under my charge and all good; kitchen Apples, such as Lord Suffield, Hawthorndean, and the Codlins are bearing good crops, but the finer table sorts are very thin; even our old favourite the Ribston Pippin is producing but a very spare crop. The weather continues cold, wet, and sunless, and altogether appearances are against our obtaining a good crop of hardy fruit.—Robert Foulis.

Cawdor Castle, Nairnshire.—Spring, and I may say summer this year have been so wet and cold, with occasional high winds and late frosts, that it is almost a miracle we have any fruit at all. The buds remained so long in a half-opened state, that both flower and leaf were weakened, and in consequence the fruit fell as fast as it formed. Everything, too, is a fortnight later than in ordinary seasons. Apples on old trees are thin, on young espalier trees plentiful; Lord Suffield and Stirling Castle are our best croppers. Of Pears we have almost none. Plums on walls are poor, but we have fine crops of Victoria on standards. Cherries are about half a crop. Peaches have lost both fruit and leaves; the best is Royal George. Gooseberries are thin, especially on old unpruned bushes; the leaves are falling and caterpillars plentiful. Red Currants are abundant; Black about half a crop. Of Strawberries, which are a good crop, we gathered our first dish to-day (July 18). Our best sorts are Garibaldi, President, and Elton.—James Maitland.

Gordon Castle, Banffshire.—Apricots with us are under average; Apples much under average; Jargonelle Pears good, most other sorts under average. Of Early Purple and Victoria Plums we have a fair crop both on walls and on standards; all other sorts are under average. Strawberries fully an average. Cherries, Peaches, and Nectarines under average. Small fruit all very good in quality, and fully over average.—John Webster.

Ardross Castle, Ross-shire.—Amongst fruit crops in this district we have many failures. Pears, Apples, and Plums are very poor; Gooseberries moderate; Black and Red Currants good; Raspberries a fair crop, but late; Strawberries very abundant, but also very late. This is a late place any season, but much more so this year than usual. We have no Peaches except under glass; in gardens along the sea-board Peaches have failed in some places on open walls where they usually succeed. Pears are also a failure in most places in this neighbourhood.—R. Massie.

Glamis Castle, Forfarshire.—This is perhaps the most backward season which we have experienced for a quarter of a century. In the months of March, April, and May very low temperatures were registered, consequently both seeds and blossoms kept dormant till late in spring. As regards the blossoms the result has not been unfavourable, as they have escaped the late frosts which prevailed so much in this quarter. The temperature of June has been an average one, but the present month has been from its first day wet and sunless, and very unfavourable for the Strawberry harvest, which is abundant, and would be all that we could desire if we only got dry weather. Our standard varieties are Vicomtesse Héricart de Thury, President, Eclipse, Keen's Seedling, Elton, Glengarry, Sir J. Paxton, and Bountiful. Cherries are an average crop; most of the common kinds are grown here and do well. Small fruits of all kinds are an average crop. Plums on walls are a full crop; they consist chiefly of Jefferson, Victoria, Prince of Wales, Orleans, Goliath, and Magnum Bonum. Apricots are thin; Breda, Hemskerk, Musch Musch, and Moor Park being our standard varieties. Pears are also thin on walls, and few are grown as standards; we grow and ripen the following on the wall, viz., Gansel's Bergamot, Beurré Bosc, Beurré d'Aremberg, Beurré d'Amanlis, Beurré Rance, Beurré Superfin, Williams' Bon Chrétien, Doyenné d'Eté, Duchesse d'Angoulême, Glou Morceau, Jargonelle, Louise Bonne of Jersey, Marie Louise, Passe Colmar, Thompson's, Van Mons Léon Leclerc, and Winter Nelis. The following Apples on standards are a good crop; Court Pendu Plât, Cox's Orange Pippin, Pitmaston Golden Pippin, Kerry Pippin, King of the Pippins, Braddick's Nonpareil, Northern Spy, Claygate Pearmain, Pearson's Plate, Syke House Russet, Sturmer Pippin, Blenheim Orange, Brabant Belle Fleur, Cellini, Keswick Codlin, Dumelow's Seedling or Wellington, Gravenstein, Hawthorndean, Lord Suffield, Nonsuch, Ecklinville, &c.—G. Johnston.

IRELAND.

Viceregal Gardens, Dublin.—East wind, continuous wet, and want of sunshine have had a fatal effect upon fruit crops in this neighbourhood. Frosts were comparatively light, not exceeding 4° or 5° any night during the blooming period. The results nevertheless have been very unsatisfactory, as all sorts of fruits showed a profusion of vigorous bloom. Apricots set well, but perished on reaching the size of Kidney Beans. Peaches, even where protected, are a thin crop. Pears which looked unusually well are a failure, only a few of the sorts having a sprinkling of fruit on them. The following are a few of the sorts that do well here as pyramids:—Colmar d'Eté, Marie Louise, Beurré d'Amanlis, Beurré Diel, Napoleon, Glou Morceau, Van Mons Leon Leclerc, and Beurré Hardy. Plums are a complete failure; Cherries are very scarce. Apples, too, are thin, and the trees have a stunted appearance. Many of them have been overrun with aphides, no doubt the effect of the cold season or a stoppage of growth. As regards small fruit we are more fortunate. Currants of all sorts are a heavy crop, and so are Gooseberries and Raspberries. Strawberries are a fair crop, though not so heavy as the crop of bloom led us to expect.—G. Smith.

Knockmaroon Lodge, Chapel-Izod, Co. Dublin.—Outdoor fruits here are below the average. Apricots are very scarce. Peaches in some favourable positions are a fair crop, but their old enemy mildew seems almost unconquerable. Of Plums of the Green Gage type we have none anywhere, and of Magnum Bonum just a sprinkling. Figs are abundant and promise well. Apples middling; the sorts that do best here are Ecklinville, Lord Suffield, Yorkshire Greening, and Cellini. Pears in general are very scarce; here Jargonelle and Williams' Bon Chrétien are the best both in quantity and appearance. Raspberries are good and abundant, a remark which also applies to Red and Black Currants and Gooseberries. Strawberries, which are largely grown for market in this locality, are below the average, irregular or deformed fruit being the rule. Potatoes and all kitchen garden crops are very good.—D. Pressly.

Powerscourt, Co. Wicklow.—The abundant show of fruit-blossom which we had this spring gave promise of a most fruitful year, but the blossom was weak, and cold winds being experienced at setting time, fruit is not so plentiful as was expected. Apples will be a fair crop; such sorts as Keswick Codlin, Ecklinville, Lord Suffield, King of the Pippins, and Tower of Glamis promise to ripen full crops. Pears, too, will be a fair crop; among the best are Jargonelle, Williams' Bon Chrétien, Passe Colmar, Glou Morceau, Easter Beurré, and Ne Plus Meuris. Peaches, Apricots, and Plums have suffered the most. Small fruits are abundant, with the exception of Strawberries, which are thin this season. Gooseberries are very plentiful, and the bushes are in fine health.—Chas. Penford.

Kilkea Castle, Mageney, Leinster.—We had severe frosts late in the spring, accompanied by keen, cutting winds, which entirely destroyed what at one time promised to be a remarkably good crop of Peaches, Plums, and Apricots; and partly destroyed Gooseberries, Currants, Apples, Pears, and Cherries. Raspberries and Strawberries are a good crop. The weather here is very cold and wet.—W. A. Emery.

Headfort, Kells, Co. Meath.—Fruit crops hereabouts this year are nearly a failure, with the exception of Currants, Gooseberries, Raspberries, and Strawberries; but owing to so much wet, both Strawberries and Raspberries are rotting. Strawberries are a fine crop, especially President, Sir Harry and Eclipse; the fruit of Wizard of the North, being so much later, we may be able to save, but we have had nothing but rain with few exceptions for the last ten months. We had ten very warm days in the middle of June, but none before or since. Peaches set well and had every appearance of being a fine crop, also Apricots and Nectarines, but owing to frosts and cold east winds there are very few left; I expect, too, that we shall be worse off next year, for the wood will not ripen. Of Apples, Pears, and Plums we have very few. Figs are a good crop, but it will be impossible for them to ripen. Of Nuts we have none. Cherries were a good crop, but most of them have fallen off; in fact, I might say that I have never experienced a worse fruit season than this. When you were having fine weather in England, we were having rains and frost and cold winds, and no growth at all was made. Potatoes I am afraid will be very bad. In some places the haulm is already quite black and the tubers small, the ground being very wet and cold.—John Clews.

Florence Court, Enniskillen.—Fruit crops in this district are light this year, and late Strawberries are under average; Gooseberries and Currants about half a crop; Apples in some places a fair crop, and in others very light. There are numerous orchards in this district, consisting chiefly of Apples, Plums, and Cherries; Pears do not succeed with us, therefore few are grown. We have had a trying season; the latter part of April and May was dry, with slight frosts almost every night, which proved injurious to the fruit blossoms. Peaches, Nectarines, and Apricots are not worth growing here out-of-doors.—J. McDonald.

Woodstock Park, Inistioge.—Early in spring the fruit crops hereabouts promised to be one of the heaviest we ever had; the blossoms set beautifully and in great quantities on Apples, Pears, Plums, Cherries; and bush fruits were equally satisfactory, but the weather at the end of May and beginning of June proved disastrous; and although we had no actual frost, many Peach trees lost their leaves, and Apple trees had the appearance of being roasted. Strawberries also suffered a good deal. Black and Red Currants are plentiful, but small. Apples, Pears, Plums, and Cherries are a light crop. Peaches very poor. Figs good, but late. Filberts good. Gooseberries good, but very late. Varieties have little to do here in the way of securing a crop, for should the trees be just in bloom or have set their fruit, a few days of cutting east winds make them fall off.—G. Dodd.

Ravensdale Park, Newry.—Apricots are not grown out-of-doors here, and of Peaches we have but few. Apples are a very bad crop, late frosts having destroyed the blossom, and the trees are looking anything but healthy. Pears are a light crop. Plums and Cherries are both under average. Strawberries are a moderate crop.

Gooseberries abundant, and Currants plentiful. With us the season is late, and prospects indifferent.—F. Fowler.

Birr Castle, Parsonstown, King's Co.—The late spring frosts which we experienced in this district when the trees were in blossom committed sad havoc. We have, however, good crops of all kinds of bush fruits, but they are late, and ripening slowly. Strawberries, too, are plentiful, but ripening badly; in fact, they are rotting on the ground owing to continuous wet and sunless weather. Apples are an average crop; all kinds of them, indeed, do remarkably well here in most seasons. Pears are thin and poor. Plums are a total failure here, and I believe throughout the district, although the trees were loaded with blossom. Apricots are very thin. Peaches on open walls that were protected during frost are a fairish crop, but I doubt they will not ripen unless a great change takes place in the weather. Figs are abundant and good; they seem well adapted to this district. Nuts, both Filberts and Cobs, are plentiful.—T. J. Hart.

SUPPLEMENTARY ENGLISH REPORTS.

Southgate, Middlesex.—Apples, where there are any at all, are a light crop, and in many places a total failure; any exception met with is where the soil is of more than usual depth for the neighbourhood, of good quality, and inclined to be a little moist, conditions under which the season's growth was not prematurely stopped by the drought early last summer, and consequently not again excited by the influence of the rains which fell about the end of August and beginning of September, through which great numbers of the trees hereabouts were affected, retaining their leaves in a green state long past their usual period. Old trees are carrying more fruit than young ones, and Keswick Codlin, Lord Suffield, Yorkshire Greening, Cox's Orange Pippin, and Irish Peach, are bearing more than any other kinds. Pears on walls in most places are a thin crop, and standards and espaliers are bearing little or none. Peaches and Nectarines are about a third of a crop. Apricots are a failure, and of Figs there are very few. Plums on walls are very thin, and there are next to none on standards. Cherries light. Gooseberries and Currants a fair crop, and Raspberries an average crop. Strawberries have been abundant, but late and soon over. Filberts are a very heavy crop, but Walnuts are very thin.—T. Baines.

The Deepdene, Dorking, Surrey.—Fruit crops in this neighbourhood are only moderate. Of wall fruits there is indeed a great scarcity, there being no Peaches, Nectarines, or Apricots. Of Pears, there are a few in some places; but in others there are none. Plums are almost a total failure; the only tree that has a crop on it is Rivers' Early Prolific. Apples in places are a fair crop, in others light. Figs on walls are plentiful, as are also hardy Grapes. Gooseberries, Currants, and Raspberries are good and plentiful, especially the latter, owing to the fine rains which we have had. Strawberries have been a good crop. The promise of fruit in spring was abundant, but the long-continued east winds and sharp frosts which were experienced in May reduced the crops to very moderate ones, with the exception of bush fruits.—John Burnett.

Latimers, Bucks.—We have about forty varieties of Apples here, on most of which there are a few fruits; King of the Pippins, Cellini, and Lord Suffield are loaded, and will require thinning. Pears, both standards and wall trees, are a complete failure. Of Apricots we have very few on the Moor Park. Plums are a fair crop, the best being Prince of Wales and Jefferson. We have no Damsons. Peaches and Nectarines are a failure, and the trees are nearly killed, although protected by means of branches. Gooseberries are a first-rate crop; the best are Warrington and Whitesmith. Currants (all sorts) are excellent; and the same may be said of Raspberries. Strawberries have been fine, but they did not last long; the best were President, Sir J. Paxton, and Vicomtesse Héricart de Thury (Garibaldi), the latter very prolific; I counted 140 fair-sized fruit on one plant. I have never seen such large crops of Nuts as there are this year; but of Walnuts we have only a very few on the large trees in the park. Cherries are very good both on walls and on standards. As the garden here stands high, we suffered a good deal from want of rain up to St. Swithin's Day; but since that time we have had plenty. I am sorry to say that although Potatoes have looked remarkably well hitherto, I found the other day disease in the Early Rose and Myatt's Ashleaf.—A. Donaldson.

Mentmore, Bucks.—In this district fruit this season will be scarce. Apples are a partial crop. Plums and Pears a failure. Small fruits good, especially Strawberries, which have been very fine—the best kinds have been Vicomtesse Héricart de Thury and Elton; Bicton White Pine is also a good cropper, and makes a pleasing change for dessert. Cherries set a good crop, but a great many dropped in stoning. Walnuts are a moderate crop. There is a very fine old Mulberry tree in a sheltered part of the ground here, which always bears good crops, but this year it has fruited better than usual. We have a great many acres of orchards, consisting of young trees planted seven and eight years ago, all of which are growing remarkably well this year, and are more free from insects than usual —J. Smith.

Cleveland, Lyme Regis, Dorset.—The fruit crop generally in this neighbourhood is much below the average. In the early part of the season the prospects were encouraging, but subsequent cold winds and uncongenial weather, especially during April and May, considerably damaged our fruit prospects. Pears with us are almost a failure. The Apple trees were one mass of bloom, but severe southwest winds and cold nights prevented more than half a crop setting. Wall fruits, too, are deficient; Peach and Nectarine trees are much injured, and suffering in many places from mildew. Plums are very scarce, but of Cherries we have a fair crop. Bush fruit is more satisfactory, Gooseberries and Currants being an average crop, and Raspberries are plentiful and good. Strawberries are also a good crop, but some of the fruit is deformed and small. Walnuts and hedge Nuts are fair crops.—Henry Munro.

Sandringham, Norfolk.—After thirty-four years' experience this has been the worst season as regards fruit which I have seen. We had a mild winter and tolerable April, though there was an absence of sunshine, but May was disastrous to all fruit trees in this district. Peaches and Nectarines are only now recovering from the effects of the north-easterly winds which prevailed at that time, and which were much more destructive than a very severe frost. Pears, Plums, Peaches, Nectarines, and Gooseberries have all succumbed; Apricots, too, are gone, and now our only fruit is Strawberries, which have been a fair crop; Raspberries and Currants have also been good, and there is a fair crop of Apples. Potatoes look well and, as yet, show no disease.—C. Penny.

Killerton, Exeter.—Peaches and Nectarines hereabouts are scarce; the trees were much blistered in spring, but they are now recovering. Apricots are very scarce, and Cherries are only a moderate crop. Plums on walls are scarce, and there are none on pyramids; the best croppers here are Mitchelson's and Prince Englebert. Pears on pyramids are very scarce; some sorts on walls are bearing fair crops, viz., Glou Morceau, Joséphine de Malines, Jargonelle, Knight's Monarch, Zéphérin Grégoire, and Beurré Rance. Figs are a good crop, and so are Strawberries, especially Newton's Seedling, which is a great bearer, but being acid it is only grown here for preserving purposes. Raspberries are good. Black, Red, and White Currants, and Gooseberries are also abundant, and Filberts and other Nuts are plentiful, with the exception of Walnuts, which are scarce. Apples are very plentiful in some orchards, in others very moderate. Since wet weather has set in the Potato disease is spreading rapidly, the American Early Rose being at present affected the most.—John Garland.

Bicton, Sidmouth, Devon.—Peaches and Nectarines with us are almost a total failure; and the same may be said of Apricots. Plums, both on walls and standards, are quite a failure, and early Cherries are a scanty crop; but Morellos on walls are a heavy crop. Some sorts of Pears, too, are a heavy crop. Apples in some places are a very heavy crop, in others scanty; the kinds grown here are mostly Cider Apples. Strawberries are a fair crop. Raspberries scanty, the wet winter having killed the greater part of the bearing canes. Gooseberries and Currants a full crop. The Potato disease is showing itself very badly in some places in this neighbourhood.—Alfred George.

Wroxton Abbey, Banbury, Oxon.—Of Gooseberries, Strawberries, Raspberries, and Red, Black, and White Currants, we have very good crops. Of Pears we have almost none, both on walls and standards. Plums on walls, very few. Apples are not a fourth of a crop. Morello Cherries are good; but of other varieties we have not half a crop, and these very much damaged by the heavy rains which we have had lately.—William Finlay.

Morningside, Kidderminster.—I am sorry to have to report from this neighbourhood an almost total failure of the fruit crops, the only exceptions being in Apples and some of the smaller fruits. Of Apples, there are here and there a fair sprinkling; the sorts most in favour are Lord Suffield, Cox's Pomona, Blenheim Orange, Dumelow's Seedling, and Brabant Belle Fleur; for culinary purposes and for dessert, Cox's Orange Pippin, Lord Burghley, Ribston Pippin, Claygate Pearmain, Melon Apple, Golden and Keddleston Pippins, White Nonpareil, Pine, Golden Pippin, Sturmer Pippin, Reinette Van Mons, Irish Peach Apple, and Kerry Pippin, on most of which there is rather better than a quarter crop, the largest bearers being Lord Suffield, Dumelow's Seedling, Claygate Pearmain, Cox's Orange

Pippin, Lord Burghley, Sturmer Pippin, and Melon Apple. Pears are conspicuous by their total absence; there is scarcely a Pear of any sort to be seen. The sorts which generally bear well here and in this neighbourhood are named in the order of succession, viz.:—Beurré Giffard, Summer D'Aremberg, Madame Treyve, Bon Chrétien, Gratioli, Louise Bonne of Jersey, Beurré Superfin, Beurré D'Aremberg, Doyenné du Comice, Marie Louise, Beurré Diel, Nouvelle Fulvie, Easter Beurré, and Olivier de Serres; all bloomed immensely, and some sorts set their fruit, but it gradually dropped off, till scarcely one was to be seen. Of Plums, the only sorts bearing a very few are Early Prolific, Victoria, and Pershore, the latter the greater bearer here this season; sorts that usually succeed in addition to the above are Coe's Golden Drop (one of the best Plums grown), Jefferson, Kirke's, Bryanstone Green Gage, Reine Claude de Bavay, Cox's Emperor, Mitchelson's, Pond's Seedling, and Belle de Septembre; Transparent Green Gage is here, but is a shy bearer, and requires repeated root-pruning to check its exuberant growth; I am trying it in pots with this view, as I regard this variety as the best of all Plums in quality, and worth taking a little pains with. Apricots, Peaches, and Nectarines are a total failure out-of-doors, and a diminished crop under glass. The Peaches which usually succeed here are Early Rivers, Alexandra Noblesse, Bellegarde, Raymackers (a kind of Noblesse, very late and good, and an excellent bearer), Royal George and Princess of Wales (another excellent late sort, large, and of good flavour). The best Nectarines here are Lord Napier, Downton, Elruge, Hardwicke Seedling, Pine-apple, and Victoria. Of Mr. Rivers' new seedling Peaches, Merlin has fruited here in pots in the conservatory, and bids fair to be a good, moderately-early Peach, large, and of rich and racy flavour. Strawberries are generally a good crop, but vary considerably in different localities; here the crop is the largest ever seen, but the fruits in consequence run somewhat smaller than usual; there is, however, a large amount of fine fruit, large plants of eight and nine years' standing measuring between 2 ft. and 3 ft. across, and bearing 5 lb., 6 lb., and 7 lb. of fruit each, and strange to say, the nine-year-old plants are carrying the largest crop; I shall, therefore, allow them to stand the tenth year before digging them in; all sorts alike are good this year, but the following are in great favour, viz., British Queen, La Constante, Enchantress, Carolina superba, Early Crimson Pine (one of the best for a general crop), Sir John Falstaff, Early Prolific (unusually fine this year), Amy Robsart, Hundredfold, Scarlet Pine, and Excelsior; Duke of Edinburgh, Amy Robsart, Early Prolific, and Excelsior are excellent forcers, and bore heavy crops in March and April; Amy Robsart will probably supplant all other sorts for a first early, being of easy cultivation, much larger than Black Prince, quite as early, and of exquisite flavour; it is also a heavy cropper. Mrs. Laxton—a hybrid between Laxton's Alliance (a new starting-point from the original Pine and Alpine races) and my Fragaria tardissima—bids fair to be a great acquisition; fruit very rich, remarkably solid (almost buttery), juicy, nearly black when fully ripe, and much increased in size by the cross; it is also late, a good bearer, and in flavour quite unique. Raspberries are also bearing well, and the fruit is very fine; the sorts which succeed well here are Red and White Fastolf, Red and White Antwerp, and Carter's Prolific, all very good, and quite equal and more to be relied upon than any of the new-fangled sorts. Cherries are very scarce, and the same may be said of Medlars. Quinces are also a total failure. Gooseberries and Currants are a heavy crop all round; the Gooseberries in favour here are Hopley's Companion, Warrington, Leader, Snowdrop, Leveller, Broom Girl, Pitmaston Green, and Yellow Gage. Lee's Prolific Black Currant is an acquisition; we have a heavy crop of fine fruit this season, which is sweeter than the old sorts for dessert, and at the same time makes a rich piquant preserve with less sugar. Nuts and Filberts are the heaviest crop seen in this neighbourhood for some years past; the best bearers and sorts most prized are the Cosford Nut (a very large kind with well-flavoured kernel and thin shell), and the Lambert and White Filberts, the former being large, late, and an excellent keeper; the Purple Filbert is also cultivated here for its beautiful foliage, and though not so good a bearer as the others, it makes a pleasing variety in the dessert. Notwithstanding these successes, the loss of the Pear and Plum crop is so serious to people generally, that the year 1877 will be long remembered as one of the most disastrous on record.—Wm. Roden, M.A., M.D.

The Priory, Warwick.—We had a profusion of blossom on all our fruit trees, but nevertheless, with a few exceptions, the fruit crop is a failure. On Peaches, Nectarines, and Apricots there is no fruit. Pears and Plums on walls, standards, and pyramids are likewise fruitless. On Apples there is a fair sprinkling, Lord Suffield, Hawthorndean, Normanton Wonder, King of the Pippins, Devonshire Quarrenden, and Newtown Pippin being the best. Cherries are very scarce. Raspberries, Gooseberries, Red, White, and Black Currants are good crops, and extra fine in quality. Strawberries are heavy crops, but the fruit is small. Walnuts are a fair crop, and Filberts very abundant. Early Potatoes are sadly blighted.—Robert Greenfield.

Wimbledon House, Surrey.—Of Apples, the following varieties are producing a fair crop on standards, viz., Ribston Pippin, Cockle Pippin, Fearn's Pippin, and Lord Nelson; the best dwarf trees are Court of Wick, Claygate Pearmain, Mannington Pearmain, Summer Golden Pippin, Yellow Ingestre, Scarlet Nonpareil, Cornish Aromatic, Golden Reinette, Alexander, and Devonshire Quarrenden; crops on cordon-trained trees are a failure. Pears are also in every case a failure; I protected a quantity of pyramids this spring with thick canvas and mats, putting on the covering at night, and having it removed every morning; but the trees so treated are producing no more fruit than those fully exposed. Walnuts are plentiful, and Filberts, Cob, and common Hedge Nuts are a very heavy crop. Mulberries, too, are plentiful, but of Medlars and Quinces we have none. Currants, Raspberries, Gooseberries, and Strawberries are good crops. Peaches, Nectarines, and Cherries are very scarce, and of Plums we have none either on walls or standards, not even common Damsons and Bullaces. Of Apricots we have very few indeed; the Moor Park is the best. Figs are a poor crop.—James Ollerhead.

Belvoir Castle, Grantham.—In regard to fruit crops, the present year has afforded another instance of the injurious influences of abnormal warmth in winter and prolonged and unusual cold in spring, when a certain vegetating temperature is so much required both for root and flower buds. The ill effects of an east wind were never more marked and evident than during the months of April and May, and wherever fruit is found this year it is in spots sheltered from its ungenial influence. The earliest-blooming trees have suffered the most. Apricots, which were excited to action early in the year, and which blossomed fairly well, were so severely checked by cold, wet, gloomy weather, that the result as regards setting of the fruit was altogether disastrous; indeed the failure is more complete in this crop than I ever remember to have observed. The weather during the time of the blossoming of Plums was equally adverse and destructive, and their failure is also very general, a little fruit on Denyer's Victoria being the exception. Pears blossomed vigorously, but chilled rather than frozen the blooms fell off, and standard trees are generally quite bare of fruit; on walls with a west aspect Doyenné d'Eté and Bergamotte d'Espéren are bearing heavy crops. Some grafted branches of Poire Pêche are also loaded, and there are trees of Doyenné Boussoch, Orpheline d'Enghien, and Winter Nelis bearing light crops. Peaches suffered greatly from the cold in May, and the crop is very thin and the trees much injured. Apples blossomed rather late, and there was a promising amount of bloom, much of which fell off and left many orchard trees quite bare of fruit. Sheltered trees of Frogmore Prolific, Northern Greening, Herefordshire Pearmain (a sort that has never failed here for twenty years); Besspool and King of Pippins are bearing good crops, but the general result will not equal an average crop. Cherries are very thin. Nuts and Walnuts are bearing abundantly. Black and Red Currants are bearing fair crops. Gooseberries, with the exception of the Early Green, are scarce. Strawberries have not been large, but the crops have been moderately good; Frogmore Late Pine will carry on the Strawberry season until the middle of August.—William Ingram.

Bloxham Hall, Sleaford, Lincolnshire.—Fruit crops here are the worst I have ever experienced. We had a mild, open winter, with heavy rains, and up to the end of February vegetation was very forward; but from that date we had cold east winds with frosty nights, and the last week in April and the first nine days in May were stormy and cold, and on two or three occasions in May we had from 8° to 10° of frost. Apricots, Pears, Plums, Peaches, and Cherries were completely scorched, as it were; both blossom and shoots were destroyed, although covered with Frigi Domo. The trees about the end of May looked as if they were killed, but since that date they have made fresh growth and are now healthy. Apples, although late in blooming, are a very poor crop; their failure I do not attribute to frost, but to the cutting east winds which we had when they were in bloom, and as we had a wet autumn and an open winter the trees had not their proper rest; consequently the wood was not ripened sufficiently to enable it to bear a crop. Of Strawberries we have had a very abundant crop; Vicomtesse Héricart de Thury being the favourite both for early forcing and for the main crop out-of-doors. Of Raspberries we have a good crop of fine fruit. Red Currants are a fair crop, but not so fine as usual. Black Currants are a good crop; and White Currants a good average crop. Walnuts and Filberts are also a fair crop.—David Lumsden.

Radcliffe-on-Trent, Nottinghamshire.—In favoured places, which, as a rule, lie higher out of the valley than their neighbours, and which were out of the line of the north-east winds, there are fair crops of some kinds of fruits, and bush fruits in all places are a fair, and in some cases a full crop. Of Apples we have scarcely any, except in sheltered positions and on low-growing trees. Lord Suffield, Keswick Codlin, Alexander, Normanton Wonder, Caldwell, Pike's Pearmain, Besspool, and Cox's Orange Pippin are generally our most trustworthy sorts. On Apricots we have one or two fruits on the largest trees, on many none; under glass copings they are a fair crop, but many of them fell off in stoning. Of Peaches, Nectarines, Winter Nelis and Cherries we have none; the May Duke and Downton are our best sorts. Currants (Black, Red, and White) are good generally; the best are Ogden's Black, Black Naples, Red Marseillaise, Red Grape, Raby Castle, and White Grape. Pears on walls are a fair crop in sheltered places, but on orchard trees there are none; the best are Jargonelle, Beurré de Capiaumont, Beurré Diel, Easter Beurré, Superfin, Langelier, Beurré Rance, Beurré d'Amanlis, Glou Morceau, Bergamotte d'Espéren, Marie Louise, Louise Bonne de Jersey, Fondante d'Automne, Doyenné du Comice, Doyenné Boussoch, and Catillac for stewing. Of Plums we have a very few on walls, none on standards; the best are Early Prolific, Jefferson, Washington, Green Gage, Kirke's, Coe's Golden Drop, and Victoria —the last the market gardeners' mainstay. Of Strawberries, which are a good crop, the best are Vicomtesse Héricart de Thury, President, Sir J. Paxton, Sir C. Napier, La Constante, and John Powell. Raspberries, chiefly Fillbasket, are a good crop. Of Walnuts we have very few, just a sprinkling on the south and sheltered side of some trees.—N. H. Pownall.

Eastnor Castle, Herefordshire.—A mild winter, followed by a late spring, led us to believe that we should have an abundant crop of fruit, especially as fruit trees of all kinds were thickly set with bloom-buds; but numerous checks, caused by sharp frosts and keen winds up to the end of May, have produced disastrous results both as regards orchards and gardens. Apples, although partial, are more promising than they were some time ago, some kinds being heavily laden, while others are a complete failure. Apricots set well but soon commenced dropping, and still continue to fall; they will be a very poor crop. Cherries, particularly Morellos, are almost a failure. Plums, a complete failure. Peaches and Nectarines, protected by coping boards and nets, are a light crop, and the foliage is badly blistered; where protected by glass copings 2 ft. wide, they have required a good deal of thinning, and the foliage is clean and free from blister. Pears are a failure on standards and espaliers; on walls they are partial, some kinds having to be thinned, while others adjoining are quite barren. Bush fruit is abundant and fine. Raspberries were injured by May frosts, and are below the average; but the fruit is unusually fine. Strawberries, with the exception of very early kinds, are producing excellent crops of large fruit; but the early sorts, which seemed to have made a second growth after the hot weather which we had last year, and which kept moving all winter, produced a number of imperfect flowers which could not set; Keen's Seedling and La Grosse Sucrée suffered most; President, Sir J. Paxton, British Queen, Oxonian, Frogmore Late Pine, and Amateur (a first-rate variety) have all done well. Nuts and Filberts are laden with fruit. Walnuts thin, many trees having cast their fruit. Potatoes are plentiful, good in quality, but small, and disease may be detected in low, damp situations. Peas of all kinds are remarkably good; William the First is the best early Pea I have grown, and Dr. Maclean is all that can be desired for succession.—W. Coleman.

Althorp, Northampton.—All small fruits are good, with the exception of Gooseberries; other fruits are very scarce indeed. Apricots, Plums, and Gooseberries were destroyed by bullfinches, which took nearly every fruit-bud. Pear and Peach blooms were killed by the severe frosts which occurred on May 5 and 6, when we had 8° of frost. Apples were loaded with bloom, but owing to the cold weather in May they set badly, and will be very much under the average this year. Nuts are abundant. As regards Potato crops the best plan is to get them up as early as possible; last year I dug my late crop the third week in August, and laid them in small lots, and out of a very large quantity I had not a dozen bad Potatoes. Others about this neighbourhood left them in the ground until the middle and end of September, and lost nearly the whole crop. For a good early I can find nothing better than Myatt's Improved, and for a late crop Patterson's Victoria, but they require good ground.—J. Smith.

Strathfieldsaye, Winchfield, Hants.—Fruits in this neighbourhood are only a partial crop. Apples are a fair crop; but of Pears we have none. I doubt, indeed, if I shall be able to gather as many Pears as there are trees, though up to the first of May we never had fairer prospects, the trees being covered with healthy blossoms, but the bitterly cold north-east winds which occurred during the first eight days of May, and 8°, 9°, and 11° of frost at night, completely destroyed them. Much of the Apple blossom perished at the same time, but a considerable portion of it not then open fared better. I do not think I could find a single Plum on standards, and very few on walls. Cherries promised well and set thickly, but about the end of May they fell off in handfuls. Gooseberries, Currants, and Raspberries are plentiful. Strawberries suffered from the long wet weather which we had in winter; where the plants were strong the crop has been heavy, and has lasted longer than usual. The blossoms of Apricots were plentiful, strong, and vigorous, but the frost which happened on March 1st killed them, though carefully protected with good unbleached sheeting. I have proved this to keep them safe while there is not more than 10° or 11° of frost, but anything beyond that is sure to destroy the embryo fruit. I have, however, a sprinkling left on Moor Park, and a full crop upon Early Orange, evidently by far the hardiest; indeed, I have seldom failed to obtain a crop from that variety, while a crop once in three years is as much as I expect from the Moor Park and other large varieties. Trees of the Early Orange are likewise much less liable to die off than those of Moor Park; indeed, I may say that they are the only perfect Apricot trees I have on a wall 150 yds. long. I have succeeded in securing a fair crop of Peaches and Nectarines on walls; the trees were sadly infested with black fly even before the blooms were open, but by keeping the syringe constantly at work we got them clean, and they have made fine wood. Nothing can beat Royal George, Violette Hâtive, and Grosse Mignonne for general crop. Barrington and Walburton Admirable are still in my opinion superior to many of the new late varieties; one cannot reckon much on the quality of the Salway in November (its season here), but it is eatable and makes a good-looking dish.—James Bell.

Crewe Hall, Cheshire.—Peaches, Nectarines, and Apricots with me are about an average crop, but Plums, Pears, and Apples in most places are very scarce. With me Apples are something less than an average crop; some sorts are bearing well, while others have none on them. All small fruits, such as Currants, Gooseberries, Strawberries, and Raspberries, are plentiful, but the continued rains in July injured Strawberries when ripe. Owing to the prevalence of frost and cold east winds when Pears and Plums were in bloom, and the young leaves beginning to open, both fruit and foliage were much injured, but the latter now look healthy and fresh. The sorts of Peaches which I find to do best here are Rivers' Early Beatrice, Early Louise, Early Alfred, Crimson Galande, Alexandra Noblesse, Lord Palmerston, Grosse Mignonne, Dymond, and Walburton Admirable. Of Nectarines the best are Elruge, Violette Hâtive, Rivers' Orange, Pine-apple, and Victoria. Amongst Apricots Moor Park is the principal one grown here. Of Apples those which bear best with me are Keswick Codlin, Hawthorndean, Irish Peach, Cathcart, Minshall Crab, Yorkshire and Northern Greening, Ribston Pippin, Lord Suffield, and Court Pendu Plât. Of Pears the best are Jargonelle, Williams' Bon Chrétien, Marie Louise, Beurré Diel, Winter Nelis, Glou Morceau, and Easter Beurré. Amongst Strawberries I find President to be one of the best, and James Veitch, President Delacour, Macmahon, and Countess, as well as La Grosse Sucrée and Vicomtesse Héricart de Thury, have been very good with me. Damsons are largely grown in this district, but owing to the severe frosts which occurred in April and during the early part of May, the greater part of the embryo fruit was injured, and in consequence there will be but a small crop this season.—W. Whitaker.

Eaton Hall, Chester.—All kinds of fruit trees bloomed well, and we looked forward for an exceptionally good fruit year. Pears, however, and stone fruits generally succumbed to the severe spring frosts which we experienced in this district. Apples, which bloomed unusually late, were looked upon as a safe and heavy crop, but the long-continued and severe east winds which we had seemed to prevent the setting of many of the flowers, and consequently those which did set have a poverty-stricken appearance, even although somewhat improved by the heavy rains of last week. Apricots, where well protected, are a fair crop, but the trees looked very bad until the late rains set in; and the same remark applies to Peaches and Nectarines. Strawberries are a fair average crop. Raspberries, Gooseberries, and Currants very plentiful. Nuts, especially Walnuts, abundant. The season is almost three weeks later than usual.—Thos. Selwood.

Worsley, Manchester.—The past season has been a most disastrous one in this district as regards outdoor fruit crops. Plums and Pears were almost totally destroyed by the frosts in spring. Apples bloomed most satisfactorily, and being late, we anticipated good crops, but the dry weather in May was so favourable to green fly that the trees got completely smothered with it. Gooseberry and Currant bushes also suffered much from the same pest; these we were able to clear by applications of insecticide, but the Apple trees we could not manage, and the crop suffered in consequence; some few trees are, however, bearing heavy crops, but that is the exception rather than the rule; altogether Apples are a light and patchy crop. Strawberries are a fair crop, but great quantities rotted during the past fortnight of damp weather. Small fruits are a good crop, especially Gooseberries, and there is every appearance of its being a good season for Nuts. Peaches and Apricots do not succeed out-of-doors here. Morello Cherries, which are our only outdoor stone fruit, are carrying good crops.—W. B. Upjohn.

Lancashire.—Knowsley, Prescot.—Apples are an average crop, but irregular; Lord Suffield, Boston Russet, Ribston Pippin, and Dutch Mignonne are amongst our best croppers. On Pears, as on all other fruit trees, there was a fine show of bloom, but it failed to set, as did also that on Plums; many Pear trees have bloomed a second time. Strawberries and Cherries suffered through being too much subjected to rain at the time of ripening. Apricots, Peaches, and Nectarines are a medium crop; small fruits generally are good, but later than usual.—F. Harrison.

—— **Sale, Manchester.**—The Apple crop here is a failure; there are no Damsons; and of Apricots there are only a few in sheltered situations. Of Pears we have also a few; Gooseberries are a good crop, and so are Currants; but of Cherries we have none. Strawberries in market gardens here are abundant, but spoiled by the late rains.—Charles Turner.

Thorpe Perrow, Bedale, Yorkshire.—Apricots, Peaches, and Plums are a failure in this part of Yorkshire, and Pears are little better; we have not had so few since 1861. Apples on some trees are a fair crop, others very thin; here self-thinning is thought to end on St. Swithin's day—that is, all the Apples on the trees at that date are considered safe—but this year is an exception, as the self-thinning process is still going on, and if much further prolonged will be disastrous. Of Black, Red, and White Currants we have very heavy crops, and the late rains have swelled them up finely. Cherries are very thin, with the exception of the Kentish, of which there is a good crop. Strawberries and Raspberries are also good, and the same remark applies to Filberts. Gooseberries are good in some places; with us the best kinds are thin. February being mild, brought Apricot and Peach trees almost into leaf, and the disastrous cold north-east winds which we had in March destroyed all the early growth as well as flower-buds; some of our best trees are even past recovery. The Apple and Pear blooms were very weak and poor, the result of want of sunshine last autumn.—William Culverwell.

Lambton Castle, Durham.—Fruit crops in Durham, owing to the severe weather experienced during the flowering period, are the worst which we have had for a number of years. Apples, which are very thin, are perhaps best represented by Rymer, Court Pendu Plat, Cellini, Dumelow's Seedling or Wellington, Court of Wick, Lord Suffield, Ribston Pippin, Cockle Pippin, Manks Codlin, Mannington Pearmain, Claygate Pearmain, and Lemon Pippin; cooking sorts, although a little better than dessert kinds, are also thin. Of Pears we have very few; the best are Jargonelle, Althorp Crassane, Beurré de Capiaumont, Green Yair, and Beurré Incomparable; half of our trees are in bloom at the present time. Of Peaches and Nectarines we have none, and in three or four instances the trees are nearly killed. Frost destroyed our early sorts of Cherries, but late ones are good both as regards crop and quality; Morellos are thin. The Plum crop was entirely destroyed by frost. Strawberries are plentiful, but owing to the rains which we are having, they get mouldy before they ripen; Duc de Malakoff, President James Veitch, Mammoth, Amateur, and Elton succeed well in this district. Gooseberries are thin but good. Currants, thin. Raspberries a good crop.—J. Hunter.

Glyn Garth, Anglesea.—Small bush fruits with us are a good average crop, and the same may be said of Strawberries; but wall fruits are a complete failure, as are also Apples and Pears; and the same remarks apply to this neighbourhood generally.—Robert Webster.

Rust on Grapes.—Amongst all our Grapes this season all the rusted berries do not exceed a dozen, and previous to thinning not one showed this disfigurement. I am, therefore, of opinion that the scissors, while working amongst the berries, engender rust. Any one who has thinned Grapes will have observed that the scissors soon become quite moist on the part used for clipping. If they are laid down then on a piece of clean wood they will leave a rusty mark, and I am of opinion that the same stain is left on some of the berries, thus producing the disease. Wiping the scissors frequently with a dry cloth keeps them quite clean.—Vitis.

FRUITS, FLOWERS, AND VEGETABLES TRIED AT CHISWICK.

A meeting of the Fruit Committee was held on the 24th ult., at Chiswick, to examine subjects grown there for trial this season.

Gooseberries.—These were first examined, a small basket of each variety (200 in number) having been gathered for comparison and classification. The Committee selected the following as especially worthy of cultivation, viz.:—*Reds:* Red Champagne, Warrington, Monarch, and Starling. *Green:* Roseberry, Overall, Green Globe, Pitmaston Green Gage, Cheshire Lady, Shiner, and Gretna Green. *Whites:* Whitesmith, Orleans, Keepsake, Safety, and Top Gallant. *Yellow:* Sulphur, Rumbullion, Aston Hepburn, and Yellow Globe.

Red Currants.—These were examined with great care as to their nomenclature, so much confusion still existing amongst them in that respect. Of the most approved varieties noted the earliest and the largest is the Red Cherry, which has the following synonyms, viz., Bertin No. 9, Grosse Rouge de Boulogne, Fertile d'Angleterre, La Hâtive, La Fertile, Fertile de Bertin, Hâtive de Bertin, Chenonceau, Belle de St. Gilles, Fertile, Fertile de Palluau, and La Versaillaise. The Red Dutch, which is the variety most generally cultivated in gardens, has the following synonyms:—Knight's Large Red, Knight's Sweet Red, Goliath, Fielder's Red, Palmer's Late Red, Pitmaston Red, Pitmaston Prolific, Large Sweet Red, Bertin No. 1, Dancer's Selected, and Jackson's Mammoth. The Red Grape, a long-bunched sort, of a pale red. Synonyms:—Rouge Transparent, Queen Victoria, Fertile de Palluau. Houghton Castle, the best constitutioned variety. Synonyms:—Houghton Seedling, Orangefield. A fuller report of these will appear in the Society's journal.

An examination of the Turnips, of which about 150 varieties are this season being grown, was then made; the earliest was the Green Strap Leaf (Carter & Co.). Tomatoes were also examined, a very large collection of which is being cultivated in pots, the only one showing signs of ripening being Early Gem, sent by Messrs. Veitch & Sons. Of these a later examination will be made.

A meeting of the Floral Committee was held at Chiswick on the 25th ult. for the examination of the various collections of plants growing in the gardens for trial this season.

1. Zonal Pelargoniums.—Of these a large selection of the most approved newer varieties which were grown in pots last season have been bedded-out along with some of the best older sorts for comparison. First-class certificates were awarded to Mr. J. R. Pearson for Atlas, a large-trussed crimson scarlet Nosegay; Rev. A. Atkinson, crimson-scarlet. To Messrs. James Cocker and Sons for John Fraser, light magenta. To Mr. J. George for Mrs. J. George, rosy cerise; and Beauty of Surrey, crimson-scarlet, very free and excellent habit. Of the older varieties conspicuous for their excellence were noted Vesuvius, Princess of Wales, Vesta, Cleopatra, Violet Hill Nosegay, and Claude de la Meurthe, &c. Of the newer varieties which have been sent out this season, and grown in pots under glass, first-class certificates were awarded to Mr. J. R. Pearson for Rebecca, a very beautiful magenta-scarlet Nosegay; Louisa, a sort of shaded magenta-pink, mottled with rose; Blanche Gordon, light pink. To Mr. J. George for Lord Mayo, bright scarlet. Specially noticeable also were Miss Wakefield, Lizzie Brooks, and Lord Giffard.

2. Bedding Violas.—A large collection of those reported on last year are again under cultivation, the most noticeable amongst them being Crown Jewel (Grieve), Blue Beard, Blue Bell, Queen of Lilacs, lilacina, rubra lilacina, Princess Teck, and Pilrig Park. Of new varieties first-class certificates were awarded to Mr. R. Dean for Vestal, a pure white variety of a fine free habit; to Messrs. Dickson & Co. for Holyrood, a very rich, dark blue variety of good habit; to Mr. Fromow for Golden Prince, a clear yellow variety with distinct white eye.

3. Begonias.—A fair selection of these have been grown in pots, chiefly of the tuberous-rooted class, the most striking being Acme and Kalista (Veitch), Frœbeli, &c. A first-class certificate was awarded to a seedling from rosæflora raised at Chiswick, and named by the Committee Mrs. Barron. It is of very robust growth, forming a large plant; flowers large, roundish, and produced freely, of a pale rosy pink: a very distinct sort. Moonlight, a hybrid raised by Col. Clarke and certificated last year, is exceedingly attractive. This, which is something of the habit of Weltoniensis and producing long racemes of pure white flowers, will become a very popular decorative plant.

4. Fuchsias.—Of these a selected collection has been grown, occupying one house. A first-class certificate was awarded to Messrs. Laing and Co. for Lord Beaconsfield, a hybrid from the old fulgens, and possessing a good deal of its character. As a free-blooming decorative plant it will prove very valuable. Very conspicuous amongst others is Champion of the World, a very large, dark, double sort—almost a monster.

5. **Verbenas.**—Only a few varieties of these are on trial. For habit Purple King still stands pre-eminent. Blue Bell (Smith) is very effective. A first-class certificate was awarded to Mr. John Fraser for Carl Sieglig, an intensely dark blue variety, of good habit.

Hardy Annuals. — Complete collections of Iberises, Clarkias, Godetias, Viscarias, Dianthuses, Stocks, Balsams, &c., are on trial this season, and when in full flower are exceedingly showy. Of Iberis first-class certificates were awarded to Messrs. Vilmorin & Cie. for two splendid novelties—viz., I. coronata hybrida nana rosea, a variety of fine dwarf growth with large rosy-salmon flowers, not unlike gibraltarica and exceedingly beautiful; I. coronata hybrida nana alba, a variety of the same character with pure white flowers. Amongst the Godetias Lady Albemarle, which was certificated last year, is by far the finest. Of Viscarias none exceed in beauty the true V. cardinalis.

Mr. Charles Turner, Royal Nurseries, Slough, sent cut blooms of his seedling Roses Penelope Mayo and Harrison Weir. This latter variety is of a rich dark crimson colour, and is very promising. The Committee highly recommended it, at the same time requesting that it be again brought before them, being unable to give a final decision from seeing only one bloom.

THE EFFECT OF BLUE LIGHT ON PLANTS.

Mr. Peter Henderson has some interesting notes on this subject in the "American Agriculturist":—Five years ago (though utterly sceptical as to the value of blue glass) I, at the urgent solicitation of a friend, used a blue transparent wash on the glass of one of my greenhouses, thus changing the glass practically into blue; on the glass of another house, of similar size, I used whitewash. Both greenhouses were filled with plants of a similar character. In a few weeks we found that the plants in the house under the blue glass were "drawing," or spindling up more than under the white, and on examination of a thermometer, placed in each house, it was found that, during the first two weeks in June, the average temperature under the blue glass was 90°, while under the white it was 80°. This was just such a result as might have been expected, the darkened glass absorbed the sun's rays, and the heated glass gave off its heat to the interior of the house, while the whitened glass reflected them—that was all. The temperature was simply increased under the blue glass, and to the great detriment of the plants, for all cultivators know that in our hot summer months, the difficulty we have to contend against is too high a temperature. If General Pleasanton started to force his Grapery in midwinter, his blue glass would be apparently beneficial—not because it was blue, but because it would assist him in getting a higher temperature, which would at that season be desirable; or, for the same reason, his Figs might feel somewhat more comfortable and ripen more quickly. But were he to carry on the culture of either under the blue glass into midsummer, both Figs and Grapes would be likely to remonstrate. Upwards of thirty years ago it was claimed that seeds would germinate and cuttings root more quickly under dark-coloured than under light-coloured glass; this is no doubt true, and from the same cause—an increased temperature under the dark glass, but all who have had experience in such matters, well know that this "forcing" process is at the health of the subjects so treated, unless they are plants indigenous to tropical countries, to which a high temperature is natural. To claim that blue glass, or any other coloured glass, has any properties capable of affecting health, in other manner than what is due to an increased temperature produced by any other means, is undoubtedly false. Mr. Henderson no doubt assigns the proper reasons for whatever seemingly favourable influence blue glass may have upon the plants growing beneath it. That there is any peculiar power in the blue ray to accelerate plant-growth—which our readers are well aware depends primarily upon the decomposition of carbonic acid, liberating the oxygen and the assimilation of the carbon—is disproved by the results obtained by various careful experimenters. Indeed, the rays of the blue end of the spectrum are much less favourable to the decomposition of carbonic aid by plants, than yellow rays, and either alone greatly inferior to all the rays together—or white light. The experiments of Pfeffer show that the amount of decomposition under white light being 100, the red-orange rays had a decomposing power equal to 32·1; the yellow, 46·1; green, 15·0; while the blue and violet rays are only 7·6. We were quite amused with the strong common-sense view of a friend, who, in speaking of the subject, remarked: "if blue light were best for plant growth, the Creator would have provided it in the beginning." Should any of our readers desire to give their plants blue light instead of white, we would warn them that its application is patented! Blue rays are an essential part of white light, and some court may yet decide that the use of the greater involves the less, and that we are all infringing upon the patent. At last accounts white light is not yet covered by a patent, but one can not tell what may happen.

Paisley Pansy Show.—This was held on July 27 and 28 under the auspices of the Paisley Amateur Florists' Society, and was a decided success, no fewer than seven exhibitors having competed in the class for the best twenty-four Show Pansies. The prizes (which were £6, £2, £1, and 10s.) were awarded to Mr. William Paul, nurseryman, Paisley; Messrs. Dickson and Peacock, nurserymen, Paisley; Mr. Peter Lyle, Kilbarchan; and Mr. William Barr, Linside, Paisley, in the order named. Mr. Paul's twenty-four blooms, which were in excellent condition, were as follows:—Dark selfs—Michael Saunders, Alexander Watt, Oceola, J. P. Barbour, Mauve Queen, and Captain Knowles. Yellow selfs—The Mint and Citron. White self—Bessie Peacock. Yellow grounds—Robert Burns, Lord Derby, Defoe, Dr. Livingstone, Alexander McLennan, James Orr, and Clonard. White grounds—Jeannie Grieve, Mary Robertson, Minnie, Beautiful, Mary Paul, Elie Goudie, Mrs. Henderson, and Delicate. The following flowers (including some of the above), selected from other stands, are worthy of mention:—Dark selfs—Sir P. Coats, Dean's Glen, Count Bismarck, W. B. Speirs, and Hugh Austin. White selfs—May Queen and Purity. Yellow selfs—Mrs. Horsburgh and Unique. Yellow grounds—Ebor, J. Waterston, and Rev. J. Ferguson. White grounds—Captain Speirs, Bessie McAslan, Mrs. Arthur, Mrs. Eyles, and Miss E. Cochran.

NOTES AND QUESTIONS—VARIOUS.

Green Petunias.—I have sent you blooms of Petunias which seem to me very curious. I have grown them year after year, but never had any so singular: are they common?—H. D. Palmer. [Flowers more or less green may be found in nearly every bed of Petunias, especially in dull wet seasons.]

Potatoes.—These are badly affected hereabouts with disease, which commenced before they were half grown. In damp, low-lying gardens the haulm is already quite decayed—a sorrowful prospect for the labouring classes, a not half a crop can be expected.—G. B., *Longleat.*

Wild Fruits.—Beech mast is this year an extraordinarily heavy crop, indeed, so heavy that the branches are literally bent down with its weight. Hazel Nuts are also an abundant crop, and Walnuts are plentiful. Holly-berries, too, are a good crop, and the same may be said of Haws, while of Acorns there are scarcely any.—G. B., *Warminster.*

Small's Admirable Apple.—Amongst culinary Apples, I find that Small's Admirable is, perhaps, carrying the largest crop this year of any. This is a variety of the old Hawthorndean, which comes in about October or November, and lasts frequently till February. The tree is of small growth, a good bearer, and one of the best to grow as a bush in small gardens, or where the space is limited.—Wm. Roden, *Kidderminster.*

Autumn-sown Onions.—Will White Spanish Onions sown in autumn, and transplanted the following spring, keep the same length of time as those sown in the spring and gathered the same year?—W. T. W. [Spring-sown Onions if well attended to and thoroughly ripened in the autumn, will keep in good condition for a much longer time than autumn-sown ones, however well the latter may be ripened. Autumn-sown Onions are chiefly grown for furnishing a supply in summer before spring-sown crops are ready for use, and if allowed to come to maturity and harvested in the usual way, they are invariably used first, leaving the spring-sown crops for winter and spring use.]

The Cellini Apple.—In your reports of the fruit crops (p. 94-100) I find little mention made of this Apple. Such a season as the present affords a very good test of the properties of any particular fruit as regards bearing, and Cellini, as I have always hitherto found it to do, comes out well. Of two pyramid trees here, one has a fair crop, and the other almost more than it ought to have at any time. Lord Suffield, undoubtedly an excellent Apple, has with me this year not a single fruit on it, though it had, as all had, a beautiful bloom. Of the excellence of Cellini as an Apple, it is scarcely necessary to speak. It is good as a culinary or dessert Apple, and is as handsome as it is good. Two years ago, on a small pyramid, in its second season, I had twenty-two Apples, scarcely one of which was under ½ lb. in weight.—E. C., *East Notts.*

To Preserve Fence Posts.—The American "Chemist" says that a western farmer discovered many years ago that wood could be made to last longer than iron in the ground. Time and weather, he says, seem to have no effect on it. The posts can be prepared for less than two cents a-piece. This is the recipe: Take boiled linseed oil and stir it in pulverised charcoal to the consistency of paint. Put a coat of this over the timber, and, he adds, there is not a man who will live to see it rot.

No. 299] SATURDAY, AUGUST 11, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NOTES ON THE FLORA OF ZERMATT.

SOME of the readers of THE GARDEN will, I trust, sympathise with the efforts of the writer—his failures and his very partial successes—in the cultivation of hardy, and especially Alpine plants; and may accordingly be interested in an expedition he made this summer to one of the best reputed Swiss valleys for the replenishment of his stock, sadly reduced, as it was, by winter floods and spring damps. Without now saying anything in general of my experiences, let me give some account of my fortunes in quest of Alpine plants in the neighbourhood of Zermatt, its glaciers, and its far-famed Matterhorn. I must preface what I am about to say by the remark that my botanical knowledge is very unscientific. I have never been able to bring myself to pull flowers to pieces, and examine them with a magnifying glass, to decide whether the form of a style should place them in this genus or in that, but I have lived amongst them for weeks and months, learning to know them as friends, getting used to the habits of each one, both such as were visible on the surface, and those which needed careful observation to ascertain. And so I have come to know many of them as intimately as any scientific investigation would have enabled me; and, moreover, my acquaintance is thus one which is capable of continuation under changed conditions when they become (I will not venture to say with how much or how little of involuntariness) my companions in home scenes far away from their native haunts, and respond, as best they are able, to the honest attempt to make them as happy as may be in their new lot.

Zermatt and its immediate vicinity are, on the testimony of more competent persons than myself, more than commonly rich in plants. I think I never in my life saw a more varied flora, if not of the rarest flowers, than on the sunny slopes of the main valley south of the little village. My first regular expedition was to the base of the Matterhorn, where I was led to expect the higher Alpine plants to flourish abundantly; nor was I disappointed. Our way thither, as we wound along the west side of the valley, furnished a considerable variety of the less-distinctively Alpine plants; amongst them, Lactuca perennis, very closely resembling the L. sonchifolia of our gardens, though I know not as yet whether as easily acclimatised; Astralagus monspessulanus, in rich flower wherever any *débris* had been brought down from the rocks above; Epilobium Dodonæi, and in great profusion St. Bernard's Lily (Anthericum Liliago). With this last the warm, dry slopes of the valley were, in places, literally white, while at a higher level of the same slopes, but more sparingly, and where the greenness of the vegetation indicated greater moisture, grew its more graceful companion, St. Bruno's Lily (A. Liliastrum). It was early in the season on this our first excursion, for the Edelweiss (Gnaphalium Leontopodium), we gathered only a half-opened flower or two; but a week later, while passing over much the same ground, it is no exaggeration to say that a good-sized basket might have been filled with blooms without moving ten yards away from any given spot thereabouts. What is to hinder the successful cultivation in England of this interesting plant? It has evidently no special whims as to soil. At Zermatt where the rocks were for the most part a micacious schist, it grew amongst the crumbling particles of these and a scanty admixture of loam; elsewhere I have taken it up in a tuft of regular English turf which might have come from a Kentish orchard. It wants abundance of sun and perfect drainage, and where these can be given, and the first young shoots are protected from slugs, I believe it can be grown successfully. But we were bent on higher game than such plants as I have spoken of; so crossing the remarkable stream which has worn itself a way from the Zmutt glacier, the banks of which are steep and deep enough to make the head giddy to look down from, we mounted on the other side of the valley towards the great mass of the Matterhorn, which guards the whole valley like the giant warder of a castle in some book of fairy tales. It would take too long to mention even by name one half the beautiful flowers we found there on the more shady slopes in their fullest bloom, even so late as the latter half of July. Gentiana verna fringed the rich posy in its lower edge, intermingled with Viola calcarata. This by the path we chose gave place again to Dryas octopetala in untold luxuriance, with Linaria alpina (wherever the watercourse had left sufficient loose grit), and amongst the woody banks on either side, not to speak of Rhododendron ferrugineum in masses of any size, Pyrola rotundifolia in bud, with Primula viscosa nestling between the larger rocks just passing out of bloom, and Primula farinosa at our feet everywhere. I must digress for a moment to say that in the comparison I cannot help making between the flora of Zermatt and that of other lofty valleys in Switzerland which I have explored, Zermatt seems to me deficient in its Primulas, for besides the two I have just mentioned, I could only find or hear of from others, one other (Primula longiflora), which grew in abundance somewhat lower down, not to mention our own home favourites, the common Primrose and Cowslip.

But in Alpine flower-hunting, up to a certain altitude at least, increased exertion brings increased reward; and the higher we climbed the choicer were the treasures laid at our feet. Ranunculus pyrenæus and rutæfolius were as abundant as Buttercups in an English meadow, the latter almost rivalling in the silveriness of its cup the incomparable glacialis when growing in its full perfection. Androsace carnea was not unfrequent in little, compact tufts, with the commoner Chamæjasme. In the less sunny hollows Anemone sulphurea was indescribably beautiful, with occasional patches of baldensis and vernalis. Lloydia serotina was to be gathered on every moist slope, with Gagea Liotardi, looking like bridegroom to the bride, though less frequently; and last, though not least, where beauty and refinement are the characteristics at issue, Soldanellas, just outside each patch of lingering snow, if I remember rightly, both alpina and pumila. But I must not forget amidst greater varieties to notice the singularly beautiful effect of a large bunch of a white variety—the clearest, purest white—of Viola calcarata, which I have been able to bring to England almost unscathed, and which I hope will repay me next spring for the special care bestowed on its transport. If the readers of THE GARDEN care to hear more of the results of other expeditions in the same neighbourhood, it will be a pleasure to me thus to recall hours of such unalloyed and elevating enjoyment, and I may afterwards, if they please, add some few of the axioms with regard to the cultivation of my treasures which my experience, sometimes dearly bought, has led me to adopt. CANONICUS.

The Old Araucaria imbricata at Kew.—This for many years has produced a few cones which, however, have never grown to any great size, owing to their not having been fertilised. The species is normally diœcious; we say normally, because only a year or two ago a large specimen at Bicton, the seat of Lady Rolle, bore several spikes of male flowers and some female cones on the same branch. This is, however, a rare occurrence. This year the Kew plant is bearing a great many cones. Perhaps this is because it is failing in vigour, and, as is so often the case with plants or trees under such conditions, it seems to be expending all its efforts to fulfil its mission, *i.e.*, reproduce its species before it dies. From its label, we learn that it was introduced in 1796 by Mr. A. Menzies. On the slopes of the Cordilleras of Chili this species forms vast forests and grows to a great size, attaining a height of from 100 ft. to 150 ft.; the wood is very hard and durable; the cones, about the size of a child's head, are sessile on the extremity of the branches. Each cone yields a good many large seeds, somewhat the shape but about double the size of an Almond. These seeds are eaten in Chili, just the same as those of the Bunya Bunya Pine, (Araucaria Bidwilli) are eaten in Queensland; or, to come nearer home, as the seeds of Pinus Pinea are eaten in Italy. Captain Vancouver, Mr. Menzies (the surgeon of his voyage), and some other officers were dining at the table of the Governor of Chili, when a dish of Araucaria seeds was brought in for dessert. Mr. Menzies obtained permission to sow instead of eat his portion. Five of the seeds germinated on board ship on the passage home, and the Kew plant is one of the seedlings!

NOTES OF THE WEEK.

Flower Gardening at Kew.—The flower gardening at Kew this year consists chiefly of a loud shout of colour along the main walk backed by the never-ending kidney-shaped Rhododendron beds. The flower garden in front of the great Palm-house has the effect of a dowdy carpet bag not much toned down by time. These statements will only seem too forcible or unwarrantable to those who have not seen what is alluded to. It is sad to think that this is all that is done in flower gardening in the most richly-endowed and important garden in the world.

A Beautiful Canna.—The most striking plant among scarce ones at the present time in flower is Canna iridiflora, some time since figured in The Garden. It differs from all the other kinds in our gardens by its large and handsome flowers, more than 3 in. across, and of a deep pure rose. Unlike the other Cannas, its flowering shoots are held boldly up and out of the foliage, and from these the blossoms droop very gracefully. The habit is as graceful and stately, and the foliage as fine as those of other kinds. It is worth a trial in warm spots in our southern districts in summer, and it also deserves culture for the cool house or conservatory. It is now in blossom in various municipal gardens about Paris, where it is the finest plant among recent introductions to the flower garden.

The Finchley Grape Vine.—This Vine, which has for years been noted for its size and the large crops of fruit which it bears, is this year as prolific as usual. It is furnished with some 500 perfectly-formed bunches, each of which will average about 2 lb.; the berries are very large, and promise when ripe to be quite equal in colour to the excellent specimens which have from time to time been exhibited at our metropolitan shows from this establishment. The stem and branches of this Vine have increased greatly in size since we saw it a year or two ago.—S. C.

Finely-flowered Orchids.—We have at present in flower Dendrobium crepidatum, a beautiful kind, the sepals and petals of which are white tipped with rosy-pink, the labellum being all but crimson with a very large orange central blotch; on this there are thirty-two flowers. D. McCarthiæ has forty expanded flowers; in order to grow this successfully it should always be kept in a warm, moist temperature, suspended from the roof of an East India-house. Dendrobium sulcatum, which is prettier than D. Farmeri, has ten spikes; on Masdevallia Davisi there are seventy-one flowers; Odontoglossum Andersoni has four spikes, and on each there are eighteen blossoms, in all seventy-six, one of the finest varieties I have seen. O. Roezli has nineteen flowers, each measuring 4¼ in. across, and on Uropedium Lindeni there are thirteen flowers.—A. Falconer, *Leyton.*

Sweet Williams.—It is satisfactory to find that steps are now being taken to raise improved varieties of these old-fashioned border plants. Mr. Cannell, of Swanley, has thousands of Sweet Williams raised from seed, the result of crosses from kinds likely to produce something new. In a large plantation of them we found many beautiful dark smooth-petalled flowers arranged in shapely clusters, and great improvements on existing kinds. As the young seedlings come into flower, those seen to be no better than their parents are at once discarded, and if this course be persevered in, greatly improved sorts must necessarily be the result. A dwarf double scarlet kind shown to us by Mr. Cannell seemed admirably adapted for small beds or borders where taller-growing sorts would not be admissible.—S.

Two Well-grown Odontoglossums.—At the meeting of the Royal Horticultural Society on Tuesday last, Sir Trevor Lawrence exhibited two plants of Odontoglossum vexillarium, which were probably the most profusely-flowered specimens of the kind that have yet been seen in cultivation. One was the ordinary form, the other the rose-coloured variety, and in both cases many of the blossoms measured nearly 6 in. in length and 3 in. across. On the two plants were nearly 150 fully-expanded blooms. Such specimens as these enable us to form a just estimate of the value of such plants, which received, as they well deserved, a cultural commendation, and it was recommended that a medal should be awarded them.

A Flower Garden Under Glass.—The extensive range of glass recently erected at Drumlanrig for the growth of stone fruits not having been completed in time to plant the trees this season has been converted into a flower garden in which 14,000 plants have been planted, consisting chiefly of Pearson's Pelargoniums. In order to break the even surface and thus produce variety, tall pyramid Fuchsias, Coleuses, and similar plants have been introduced; and hanging baskets and a few creepers up the rafters subdue to some extent the bareness of the roof. The building being 500 ft. long, the effect of the display thus made is very striking, and the way in which Pelargoniums bloom planted in this manner compared with those out-of-doors serves to show that under glass they make a far more effective and long-continued display than four times their number out-of-doors; it is not improbable that the time may yet come when such tender and gorgeously-blooming plants will be grown chiefly under glass, and that more attention will be paid to our fine hardy plants.

Large Tomatoes.—Mr. Miles, gardener to Lord Carington at Wycombe Abbey, exhibited at South Kensington the other day the largest Tomatoes we have seen this season, consisting of a variety named Stamfordian, which is supposed to be a good selection of Hathaway's Excelsior, a kind which it closely resembles. Their skin was smooth and beautifully coloured, the flesh remarkably firm, and the fruit symmetrical in shape. If such ill-formed Tomatoes as we now see in Covent Garden be worth 3d. each, Mr. Miles' fruit ought to realise treble that sum, and even should the Stamfordian variety prove not so fruitful as others, one of its fruit would be equal to three or four of the ordinary market sort.—S.

A New Fumigator.—Those who are acquainted with the difficulties attending the fumigation of plant-houses with Tobacco, will welcome Tebbs' Universal Fumigator, which does its work free from unpleasant consequences. All that is required is to tear up a few pieces of brown paper and place them loosely on the perforated bottom of the fumigator; then fill in the fumigating material, close the top down, and set light to the brown paper with a match; the blaze will soon ignite the fumigating material, and when fully in action the draught can be regulated by a sliding door. When in full operation this fumigator may be left with perfect safety inside the house, which it will soon fill with smoke.

Table Decorations at Carlisle.—Lady Musgrave, of Eden Hall, has increased the prizes already offered by her for table decorations, and will present a cup, valued at £25, to the successful competitor. The latest date for entries is now extended to August 30, and no doubt there will be a keen competition. Lady Musgrave, Lady Lawson, and Mrs. Percy Wyndham have consented to act as judges on the occasion.

West India Pine-apples.—These have been abundant in Covent Garden this season, and they are moreover much larger and better in quality than usual. They are now being extensively used in London for preserving; a week or two ago one salesman alone received a consignment of over 7000 fruits, many of which weighed from 3 lb. to 4 lb. each, and they were well ripened and as juicy and good as could be desired. They may be bought for from 1s. 6d. to 2s. 6d. each.

Queen Anne's Pocket Melon.—This old and remarkably handsome Melon, though not cultivated to a great extent, forms one of the most ornamental dishes for the dessert-table from July to October. Good examples of it may now be seen in Covent Garden, where they meet with a ready sale at from 9d. to 1s. each. The cropping properties of this variety fully compensate for its small size, and although it is inferior in flavour to many of the larger kinds, that deficiency is more than counterbalanced by the beauty of the fruit. It may be grown during the summer months in any ordinary frame or pit with every chance of success, and the fruit will keep good for some time after it is cut.—C.

Alexandra Palace Fruit Show.—This is to take place on the 13th, 14th, and 15th of September, when prizes amounting to about £350 will be awarded to collections of fruit, vegetables, and other subjects—in all sixty-seven classes. It is added that growers in the Channel Islands will not be allowed to compete with English cultivators, except in the open classes, an arrangement which will doubtless be approved of, as on former occasions much dissatisfaction has arisen from allowing Jersey growers, who are favoured with a better climate than ourselves, to compete in the same classes with English cultivators.

A Pretty Town Garden.—With a little trouble and taste the small but valuable spaces to be found in front of town houses might be converted into charming little gardens. One of these which I noticed the other day in the neighbourhood of Chelsea might be advantageously taken as an example. It is about 25 ft. square, and fenced round, but the fences are completely hidden by a white Jasmine, literally covered with blossoms. Two plants of this Jasmine are also trained on each side of the windows which themselves as well as a small balcony, are gracefully draped with a mixture of Virginian Creeper, scarlet Nasturtiums, Blue Convolvuluses, Creeping Jenny, and Tropæolum canariense, all easily grown plants and admirably adapted for such purposes. On the shady side of the Jasmine hedges are planted Ferns amongst rough stones, and on the sunny side annuals of various kinds. In the centre (which is Grass) is a fine specimen of Rhus glabra (one of the most valuable of town shrubs), and round its base is a mass of Blue Lobelias. The effect of this arrangement was charming. Where more variety is desired it may easily be had, as there are numbers of other plants which thrive equally well in most of our small suburban gardens.—S. E.

THE KITCHEN GARDEN.

VEGETABLE CROPS.

Seldom have vegetables of all kinds been better or more abundant than they are this year, a circumstance for which we ought to be thankful, seeing that our fruit crops are a failure. Potatoes have never been finer; all our Ash-tops are now (August 4) safely stored in the seed sheds, laid thinly on boarded shelves, and not one do I find diseased. We are now using Myatt's Kidney—the yield of which is marvellous, and the quality unique. I have this day lifted for a local exhibition twenty-two roots of International Kidney which yielded 6½ st. of Potatoes, such as would gladden the heart of any cultivator, being large in size and clear in the skin, level all over, the eyes almost invisible, and, above all, although not nearly ripe, very excellent in quality. Another Kidney of the silver-skinned type, called Patterson's Milky White, although not so large as International, is of the very best description; in fact, for making what our chefs call Sausage Potatoes, for second-course vegetables, it is all that could be desired. Regents, Victorias, and later Potatoes generally, promise to be abundant; the haulm is strong and healthy, and has that deep green colour which is so desirable. Peas, except those sown in November, have been and still are most abundant. A west border here, manured heavily and dug deeply, is planted with four of my especial favourites, viz., G. F. Wilson, Marvel, Dr. Maclean, and Standard. These grow from 3½ ft. to 4½ ft. high—a very good height—and they are literally one mass of pods from top to bottom. Criterion, a new Pea grown here this season, promises to be remarkably sweet and sugary; with me it grows from 5 ft. to 5½ ft. in height, and bears its pods in pairs. It is a fine cropper, and withstood the biting east wind last April bravely. Taylor's new Pea Richard Gilbert, a cross between Ne Plus Ultra and Silver Gem, will be heard of by-and-by. Sutton's Main Crop is surely a pure stock of G. F. Wilson and New Wrinkled Marrow, of the British Queen type; it grows 6 ft. in height, and is a Pea which promises to be in all respects good. Last, but not least, comes a selection of my Hobart Pasha, which I shall be happy to distribute in small quantities for trial next season. Onions, both autumn and spring-sown, are very fine, clean, and large, and amongst them none are better than the true Reading and James' Long Keeping. Red Tripoli is so strong that I have discarded it; White Italian Flat, on the contrary, is so mild and good that no other is needed, except Little Queen for earliness and pickling purposes. Carrots, half of which have always failed here, are this year a full crop, the result of dressing the land at seed time with salt, soot, and lime. Of varieties we use Early Horn and James'; Early Nantes, grown so admirably by Mr. Pragnell at Sherborne, I never yet got true. Beet, Parsley, and Salsafy are full crops. Cauliflowers and Broccoli have been in every way excellent; Snowball is a little early gem; for winter, Veitch's Self-protecting Broccoli is one of the best, but for a later crop I like Watt's Excelsior. For planting all kinds of winter vegetables I have never known a finer season; we have Brussels Sprouts 3 ft. high, and they are just beginning to button. For sowing seeds, too, of Endive, Lettuces, Cabbages, Onions, and Carrots for next spring, the glorious rains which we have had have left the land in the best possible condition. R. Gilbert.

Burghley.

AUTUMN-SOWN ONIONS.

In this neighbourhood these have almost superseded the spring-sown crop, which during the past few years has suffered dreadfully from the ravages of the Onion fly, whilst the autumn-sown crops have escaped with little or no injury from that pest. The ordinary routine of culture is to sow the seed during the month of August, according to locality and situation, usually in beds 5 ft. or 6 ft. wide, and in drills 10 in. or 12 in. apart. If the soil be dry, the seed-bed must be kept moist by watering until the young plants are up, when the only attention required is keeping the surface clean by frequent hoeings until March, when beds of deeply-cultivated and well-enriched soil must be prepared for the reception of the seedlings. We usually spread a good dressing of soot or wood ashes on the surface of the ground, working it in with a rake, and finely breaking the soil; the beds are then marked off and the plants inserted in rows 1 ft. apart, varying the distance in the row according to the size which the variety usually attains. The Giant Rocca and similar sorts may be 1 ft. apart each way, as they grow to a large size. As regards culture, the principal points are frequent surface stirrings and dressings with any rich material, such as fowls' or pigeons' manure, guano, or wood ashes. Any that show signs of running to seed or becoming thick-necked are pulled up for use, and the bulk of the bulbs will be fit for harvesting about the first week in August, for if left in the ground too long, they are liable to start rooting and growing afresh, whereby the keeping qualities of the crop are considerably diminished. J. Groom.

Henham.

WINTER BROCCOLI.

A good Winter Broccoli is invaluable where a continuous supply of vegetables is required; for, although where efficient means of protection are at hand, Cauliflowers or Snow's Broccoli may be had in good condition up to Christmas, there is still a long interval before the so-called early spring kinds can be relied on to come into use. Veitch's Self-protecting Autumn Broccoli, however, promises to be a most useful addition to our list of early winter vegetables, for if planted in succession it continues to produce heads from November onwards. I have just planted a large quarter of this and Snow's After Early Peas. I do not dig, but merely level the ground and draw deep drills 2 ft. 6 in. apart, making the holes with a crowbar 2 ft. asunder in the rows; strong plants are then inserted with the roots a good depth in the ground, and one good soaking of water starts them into active growth. They do not suffer from drought in solid ground nearly so much as in loosely dug soil, as the evaporation is reduced to a minimum; the growth is also more solid and robust, and better calculated to withstand sudden variations of temperature. I also make later plantings in a similar manner, but in smaller quantities, as in mild autumns they continue to grow very late; in fact, Snow's Broccoli has oftener come in too soon than too late; but in cold weather Broccoli heads may be kept in good preservation by laying and covering with Fern fronds or litter, which I consider preferable to lifting and storing in pits or houses, as a confined atmosphere soon deteriorates the flavour.

J. G.

Potatoes.—Although fears were entertained early in the season that Potatoes would prove an indifferent crop, on account of the haulm generally coming up thin and spindly, the recent genial rains have caused the plants to make excellent growth, and at the time of writing the crop generally has seldom looked better. Evidences of the disease are not wanting, both in leaf and tuber, but only in a restricted sense; its spread will greatly depend upon the weather, and if warm sunny days should prevail no great cause for despondency will result. Already considerable breadths of Ashleaf Kidneys, Bresee's Prolific, Dalmahoys, and other early kinds have been lifted, as from 3s. 6d. to 4s. 6d. per bushel is a tempting price, with the certainty of no bad Potatoes at present. The main crop growths are Regents and Victorias, with here and there Dawe's Matchless and White Belgian Kidneys. Dawe's Matchless is a first-rate market Potato, as, if grown in soil of a moderate quality, it will return a good crop of clear white Kidneys of a good size immediately in succession to the Ashleafs, and such a sample will invariably command a good price in the market. The American Rose, although still largely grown, is not in good favour with the consumer, but its cropping qualities are tempting to the grower. White kinds invariably meet with most favour at all times. Flourball was largely grown for a few years, but it is now seldom met with in the market gardens in this neighbourhood. Victoria still holds its place here as a late Potato, and it is probable that it may shortly be supplemented by such robust field kinds as Schoolmaster and Magnum Bonum.—A. D., *Bedfont.*

Veitch's Self-protecting Broccoli.—Allow me to endorse the remarks of your correspondent "W. W. H." (see p. 107) in reference to this fine self-protecting Broccoli. It is without doubt the finest early winter Broccoli in cultivation; your correspondent's remarks, too, could not have been made at a better time, as all who wish can now procure plants of it, and I feel sure that when once grown it will afterwards recommend itself.—R. Greenfield, *Priory, Warwick.*

ASPECTS FOR FRUIT GARDENS.

In the interesting description of Kentish fruit gardens (see p. 101), allusion is made to the high estimation in which eastern aspects are held by fruit growers in comparison with southern slopes, not only, as the writer says, because vegetation is later (a statement with which I fully agree), but because in the event of destructive spring frosts the sun strikes the trees more gradually, thawing and drying the blossoms without injuring them, whereas in southern aspects they are suddenly exposed to the full force of the sun's rays while in a frozen state, and suffer accordingly. I have no wish to question the soundness of the views in this respect held by Kentish fruit growers, as circumstances alter cases as much in fruit growing as anything else; but from my own experience of the effect of the sun's rays on frozen blossoms or vegetation of any kind, I am positive that eastern aspects suffer more than others. In flat districts like this, the ground-level has perhaps not so important a bearing on aspect as more hilly districts, but walls and borders in various aspects illustrate the effect which the sun's rays would have on hill-sides, and certainly the advantage is in favour of western aspects, not only as regards receiving the sun's rays after the crops on them are gradually thawed and dried, but what is of equal importance, they get the benefit of the latest sun's rays and also an increased amount of latent heat given out during the night. This is the conclusion at which I have arrived: but if I am wrong I shall be glad to be set right. The best aspect on which to plant is well worth careful consideration, as every year fruit culture assumes more important dimensions; and even in the best private establishments what are generally termed common fruits constitute the staple supply, not only for everyday consumption for culinary and dessert purposes, but for preserving for use during the long winter months. The great demand that exists this year for fruit for preserving is shown by the fact that purchasers from great preserving factories are traversing even remote districts like this and buying up all the market garden produce at higher rates than local retail dealers can afford to give in order to ensure a profit. That this branch of fruit culture, with a reasonably intelligent investment of skill and capital, might be converted into a flourishing trade is certain, as the demand for such fruits is always in excess of the supply. J. Groom.

Henham.

NOTES FROM KEW.

We are glad to see that the cultivation of Stapelias is now being attended to at Kew. The flowers of these peculiar plants exhibit a great variety of form, colour, and size. More than 100 species have been in cultivation, but at present we doubt if more than half that number can be found in European gardens. Many of those figured and described by Masson in his "Stapeliæ Novæ," at the close of last century, have been totally lost, and we fear that some may have been exterminated in their native haunts, owing to the wholesale sheep-farming which has obtained of late years in the South of Africa. We thought that the Stapelias were perfectly safe from attack; we, however, now learn, on undoubted authority, that the bitter (though, it appears, non-poisonous) stems are readily eaten by goats. At present there are in flower S. variegata, S. europæa, S. mutabilis, S. cornuta, and the new S. Sarpedon var. major and S. flavirostris. Duvallia radiata and D. angustiloba are in good condition. No figure of Huernia primulina has as yet been published; it is a charming little plant, and, as might be expected from its name, the flowers are somewhat Primrose-like, both in size and colour. Hoodia Barkleyi is also in bloom; the flowers are large, campanulate, not nearly so prettily marked as in many allied genera. H. Gordoni finds a place near the last species, and will interest all lovers of these extraordinary and extremely rare succulents. The new Decabelone Barkleyi is flowering freely; its flowers are very like those of D. elegans, but the branches have nearly twice the number of angles; the spines, too, are different. In the same house there is a fine specimen of a South American terrestrial Bromeliad—Bromelia antiacantha—with a fine panicle of purplish flowers. The young leaves, which are of a reddish colour, and the large white bracts render this plant very attractive; the full-grown leaves are from 3 ft. to 4 ft. long, armed with stout hooked spines, some pointed towards the tip of the leaf, others towards its base. In some parts of Brazil and the Argentine Republic, this and some allied Bromelias cover immense tracts of country, and form in some places almost impenetrable barriers, through which the traveller has to cut every yard of his way; this has earned for them the name "plague of the camp," by which they are known to travellers and soldiers. We expect shortly to hear much more about them, as an English gentleman has obtained great concessions from the Argentine Government, and intends utilising the fibre which abounds in the leaves; we believe that it has been proved very good both as a textile and paper-making material. In the cool end of the New Range there are several specimens of Campanula Vidali, one of the most distinct and beautiful of the plants of the Azores. So far as is known, this species is absolutely confined to a single rocky island off the east coast of Flores. It has never been gathered but once, and that was some twenty years ago by Captain Vidal, during his survey of the island. The long, upright racemes of waxy, pure white, drooping flowers make this a most desirable acquisition. The deep orange annulus seated on the disc, seen when one looks into the flower, affords a fine contrast to the ivory-like whiteness of the corolla.

In the Winter Garden the Mexican Rhodochiton volubile is admired by every one. The mass of the plant is trained to a horizontal wire near the glass, and extends for more than 20 yards. From this bar a fringe of branches from 3 ft. to 6 ft. long is allowed to hang naturally; each branch is covered with flowers, and the whole forms a splendid object. Even after the dark tubular corollas have fallen, the large, somewhat persistent, lilac calices are very handsome. As seen at Kew, this is one of the most beautiful of climbers.

Seeds Injurious to Animals.—Mr. Francis Darwin, in his interesting paper on "Hygroscopic Mechanism," by which certain seeds are enabled to bury themselves in the ground, refers to the fact that the seeds of Stipa fennata are said to be capable of injuring the intestines of animals which feed upon it. A similar property is shared by Aristida hygrometrica, a Grass which is locally abundant in the northern parts of Queensland. Mr. Charles Prentice says of this species that it is fatal to sheep by reason of its long tripartite awns getting entangled in the wool, and ultimately piercing the skin and penetrating to the viscera of the thorax and abdomen, causing death after prolonged wasting and suffering; the heart, liver, and kidneys are sometimes, on dissection, found pierced by these mischievous awns in all directions.—B. M.

The Edelweiss Protected by Law.—This fluffy white flower, dear to Alpine climbers and superstitious brides, is at length, according to the "Graphic," to be legally protected, such a measure being rendered necessary to prevent the plant from becoming totally extinct. In the Engadine a law has been passed prohibiting the sale of the Edelweiss in its fresh and living condition, the first offence to be visited with a fine of 4s. The Swiss children are the worst offenders, as they pull up the plant roughly by the roots, and pester travellers to buy a small bouquet of Edelweiss, or other "Alpen blumen," for 50 cents., while in the tourist season nearly every passenger in the homeward-bound steamers to the Swiss lake-side towns wears a tuft in his hat as a trophy of his mountaineering exploits, be they even confined to a railway trip up the Righi.

Grapes Setting Without Fire-heat.—There is one of our houses here—half Vinery, half Peach-house—not heated. The Vines consist of Black Hamburgh, Lady Downes, Buckland Sweetwater, and Black Alicante. They were all in flower in May, and all are now furnished with finely-formed, well set bunches, except the Black Alicante; not one of the berries on this variety has stoned; therefore they have not swelled, and I can attribute this to nothing else than want of sufficient heat when the berries were setting.—Vitis.

Carmine-flowered Candytuft.—Messrs. Carter & Co. have sent us cut blooms of this Candytuft, which will doubtless be largely grown when better known, its colour being somewhat unusual amongst Candytufts. It is of good habit, and flowers freely in spring and early summer.

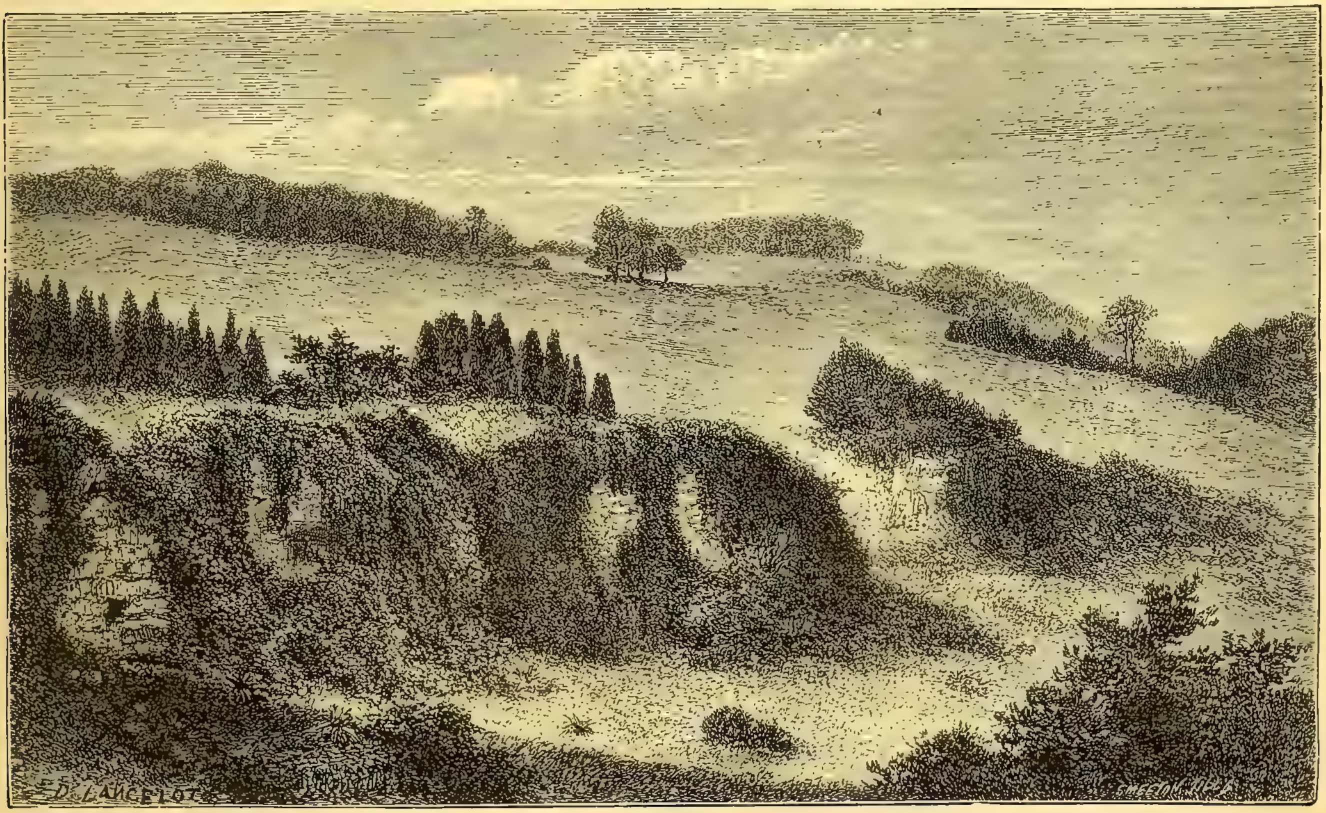
Soft or Silver Maple.—The well-known Soft Maple (Acer dasycarpum) is highly esteemed for shade and timber, on account of its exceedingly rapid growth and beautiful foliage. It ripens its seed in this latitude about the last of May, and the seed should be sown as soon as possible after it is gathered. If sown in June or July, it makes a larger growth the first season than Sugar Maples sown the previous autumn.—"Country Gentleman."

Cerasus ilicifolia.—This fine Californian evergreen has lately been in flower at Syon House. It is a native of Western America, and has beautiful evergreen leaves like those of a Holly. It bears in its native woods on the Pacific coast numerous deep red berries about 1 in. long.

Egg-plants.—Fruit of these may now be seen in Covent Garden, where they find a ready sale. Though too tender for outdoor culture in this country, where frames and pits exist they may be grown successfully in that way, and with little or no trouble.—S.

HIGH ROCKS IN BOLD PARK SCENERY.

These high rocks in the foreground of our sketch once formed parts of the walls of an old quarry; now they are richly draped with the common Ivy and with Virginian Creeper. Given a knowledge of plants and some feeling for their wants, almost any kind of surface may be made beautiful—perhaps this kind easiest of all. Such rock walls invite a novel kind of decoration easy to carry out. Cliff and wall drapery—curtains of flowers as well as the usually graceful wandering shoots of climbing and creeping plants. A whole world of beauty exists in hardy flowering climbers and creepers (both shrubby and herbaceous) which, with a little care and thought, would show to great advantage in our gardens. There are without the garden proper in many country seats surfaces and positions more or less like that illustrated, which could with ease be made beautiful gardens. By flowering climbers and creepers are meant such subjects as the various hardy species of Clematis among shrubs, and the Everlasting Pea among herbaceous plants. The large-flowering new Clematises are likely to be taken care of in gardens, but there is a host of wild species even more graceful in habit, and bearing crowds of pretty flowers which are rarely seen in cultivation. Planted above the walls, banks or rocks, and allowed to fall naturally over them, such plants would arrange themselves in various charming ways, and annually increase in beauty. Opportunities for planting on the face of the cliff should also be taken advantage of. Broad ledges or deep fissures may sustain subjects of vigorous growth, while many plants will grow in such places without any apparent nutriment. Varied charms are only to be added to a scene of this kind by developing different types of vegetation on different parts of the rocks or banks instead of the usual error of repeating the same note everywhere. Where such a system is carried out, curtains both of Ivy and Virginian Creeper would find a place, but would not be the main or the only features. Attention may be called to the wide open lawns beyond the rocks in our sketch, which show a breadth and simplicity very desirable in bold garden scenery.



Ivy-clad Rocks in Park.

THE GARDEN OF BRITISH WILD FLOWERS.

The Crowfoots (Ranunculus).—The popular name Crowfoot, taken from the divided leaves of our Buttercups, is hardly applicable to all the 160 species of this genus, since many have undivided leaves. Still less generally applicable is the name Buttercup, since others have white flowers; they all agree, however, in possessing numerous stamens and heads of numerous dry fruitlets, with other technical characters. The genus inhabits the temperate regions of the globe, and extends partly into Arctic Europe, being represented in Britain by some thirty or forty species, mostly inhabitants of the water or the neighbouring moist meads, of which some eight or ten are of interest to us as gardeners. Mention or suggestion has been already made of the bank, the clump, the rockwork, the lawn, the wood, and the corn-field, as the scenes on which the varied beauties of our wild flowers are displayed. We now come to a group entirely inhabiting the water, and as the water, natural or artificial, should be one of the most attractive features in any garden possessing it, we must be glad of every additional charm we can lend it. The Water Crowfoots are distinguished by their white flowers, smooth leaves floating on the surface below which they often bear finely-cut, thread-like leaves, suited for this submersion, and by an absence of those acrid properties which distinguish the land plants of the group. This last peculiarity renders them a useful food for cattle, who are very fond of them. The forms valuable for beauty belong to the aggregate species (Ranunculus aquatilis), and though we need not concern ourselves as to the relative systematic value of the variations to which different botanists assign specific, sub-specific, or varietal rank, the beauty of these forms is very diverse. All agree in having white petals, each with a yellow base, between which in some may be seen the green points of the sepals, but while some have no floating leaves, others have no submerged ones, and the size of the flower is very variable. Thus Ranunculus circinatus, which is recorded in Dr. de Crespigny's "New London Flora," from the Roding, near Hainault Forest, and from ditches in Moor Park, Farnham, though

Water Crowfoot (Ranunculus floribundus).

without floating leaves, is noteworthy for its large flowers; Ranunculus fluitans, a large and distinct form, growing in the deep and rapid parts of the Thames, the Lea, and the Colne, is also destitute for the most part of floating leaves, but has large flowers, sometimes with two whorls of petals and fine, long submerged leaves, often from 6 in. to 10 in. in the length of their segments; but perhaps the most generally useful will be Ranunculus floribundus, a form with, as its name implies, numerous flowers, which are large and are admirably set off by three-lobed floating leaves, whilst, if the water be clear, as all ornamental water should be, the short, radiating segments of the submerged leaves render this form an epitome of the beauty of the group. It is fortunately not uncommon—being recorded from near Sunningdale, from Walthamstow, and from the Wey at Elstead, whilst I believe it is this form which occurs in a pond south of Surbiton, on Epsom Common, and at Burgh Heath, Banstead. A locality may probably be found for it in most neighbourhoods. It is suited for stagnant or gently-running water, and should be grown in an isolated patch or island not touching the bank. A very different plant is the Great Spear-wort (Ranunculus Lingua), one of our grandest waterside plants, inhabiting marshes and ditches, unfortunately rather rarely from Moray southwards. It grows about 3 ft. high, or even more, and has smooth leaves nearly 1 ft. in length and 1 in. broad, with yellow flowers nearly 2 in. in diameter, which appear from July to September. It is altogether a noble plant, and should be associated on the water's margin with the Water Plantain and Great Water Dock, the Iris, the Bulrush, and the Royal Fern; or it may be planted with advantage in the marshy, long-grassed, water meadow, with Marsh Marigolds, Ragged Robin, and Cotton Grass. It is recorded as growing on Totteridge Green, Herts, in ponds on Uxbridge Moor, on Iver Heath, Bucks, and at Cookham, Berks. Every one knows, or thinks he knows, a Buttercup.

Double Buttercup (Ranunculus acris fl.-pl.).

Under this name, however, three or four distinct species are confounded. The Meadow Crowfoot (Ranunculus acris), distinguished by having no runners or bulbous base to the stem, is universally common in moist meadows or by roadsides, and is the first of the group to flower. It varies in height from a few inches to 3 ft., and blooms from April to September. The beauty of this plant consists in its branching habit, cut leaves (closely resembling those of some Pelargoniums), and the glossy golden-yellow of its petals contrasting with its pale green calyx. A valuable double form is in cultivation, in which shape is not all lost, whilst the mass of colour is increased. It is suitable to grow anywhere, but would seem specially in place where the Grass is left to grow. The Creeping Buttercup (Ranunculus repens) is similar in many points of beauty to the last; but has long runners, and a lower, more compact habit. It grows, moreover, on waste ground, and mostly in dry situations, and is, therefore, suited to the rock-garden. A double form of this also is in cultivation; it blossoms from May to August, and the wild plant is common in every neighbourhood. The Bulbous Buttercup (Ranunculus bulbosus) is not quite so universally distributed as the two last-mentioned species, and perhaps loses in beauty by the green sepals being reflexed.

Double Creeping Buttercup (Ranunculus repens fl.-pl.).

It has no runners, but a bulbous stem: it frequents the same situations as Ranunculus acris, but flowers only during May and June. Here again we have a double form in cultivation. This species seldom exceeds 1 ft. in height, and its blossoms are rather smaller than in the two others.

Double Bulbous Buttercup (Ranunculus bulbosus fl.-pl.).

Among bright little annuals suited for the company of Pheasant's-eye, Poppies, and Corn-flowers, we may notice the Corn Crowfoot (Ranunculus arvensis), whose numerous lemon-yellow flowers afford a shade somewhat unfrequent among our wild plants. It is a low-growing, nearly smooth plant, flowering from May to July, but not very common in the corn-fields round London. The love of flowers is perhaps more real and universal with us in our heaven-encircled infancy than in maturer but more sordid manhood, and among the favourites of our childhood none were more treasured than the Nature-gilt Kingcup, Pilewort, or Lesser Celandine (Ranunculus Ficaria), with the bright gloss of its kidney-shaped leaves, which act as mirrors for the yet brighter star-pointed flowers "that come before the swallow dares"; the companions of the first Violets, Primroses, and Anemones of the year. This plant is common everywhere, in woodland and hedge-row, in cool damp places, and, bright in the "raging moon of Daffodil and Crocus," well deserves a place on some bank or in some coppice of the wild garden, amid its just-named compeers, Mossy stumps and trailing Ivy. A special beauty, which this flower has apart from other Ranunculi, is, in addition to its extraordinary gloss, the sharply-pointed outline of the petals, the triangular rays of a star rather than the bellying sides of a Goldencup, as in the Buttercups.

The Pheasant's-eye (Adonis autumnalis).—It is chiefly in the corn-field, the domain of Ceres, that this plant occurs. This, with its scarlet flowers and somewhat southern distribution, shows it plainly to be only a naturalized alien in this country. Its finely divided leaves and bright petals with a dark centre render it a most attractive plant for dry, sunny spots or for the rock garden. It grows from 6 in. to 10 in. in height, branched and very leafy, and it flowers from May to July. It is not uncommon in the chalky corn-fields of Kent, in Suffolk, Essex, the Isle of Wight, Dorset, and Wiltshire, but is local in other counties. It occurs on the continent of Europe, in Western Asia and North Africa, but is only an introduced plant in America. The park or garden is generally separated from the surrounding fields by an impenetrable fence; but it would surely be often feasible and seemingly most nature-like, and therefore desirable that the two should merge into one another through a strip in our corn-fields, in which such plants as this, with Poppies, Corn-cockle, Corn-bluebottle, Scabious, and such like, might luxuriate without dread of the practical agriculturist. If necessary this half-cultured strip might be divided from the clean land by a ditch or sunk fence of any width.

G. S. Boulger.

The Pheasant's-eye (Adonis autumnalis).

TREES IN TOWNS.

This is a subject which naturally occupies a large share of public attention, especially among those whose lot is cast in or near our more important centres of industry. Londoners are much better off for trees than the inhabitants of such commercial centres as Manchester and Liverpool, not to mention many smaller, but still very important, manufacturing towns of Lancashire and Cheshire; and the noxious agencies against which tree life has to contend in these districts are more varied, as well as more deadly, than those with which we in the south have to deal. It is only by the bringing together and comparing of experiences that satisfactory information upon the subject can be obtained; and it is, therefore, with much satisfaction that we observe the Manchester Field Naturalists' Society has taken up the matter. From their last report, which is now before us, we glean a few facts which we think will be useful to our readers; a recent visit to Manchester and one or two other places in the neighbourhood enables us to supplement these from our own observation.

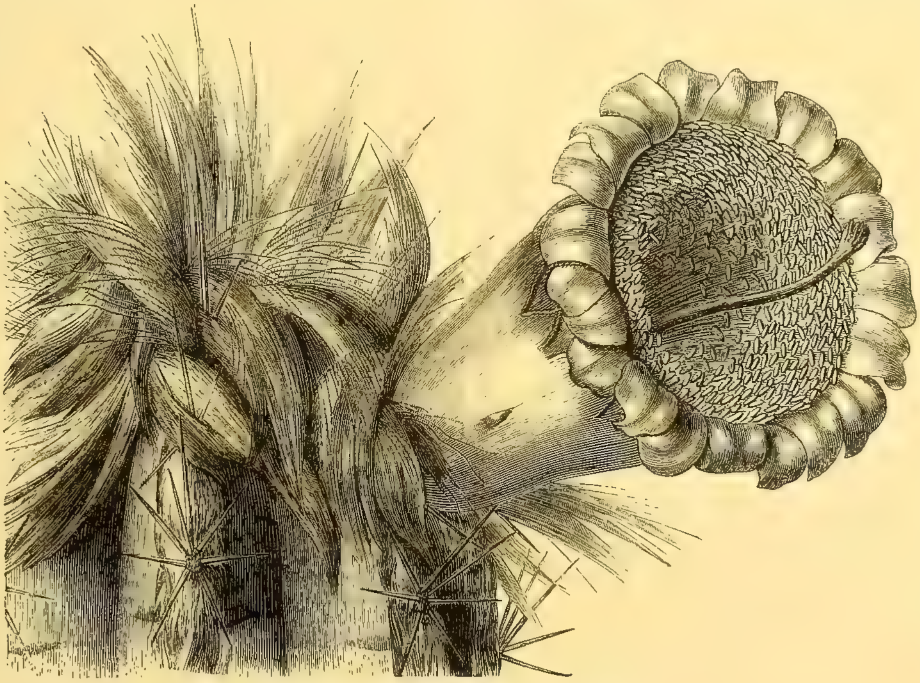
Most visitors to Manchester probably include the Cathedral, or "the old Church," as it is more generally called, in the objects of interest which they feel it incumbent on them to inspect; and these cannot fail to be struck with the fact that there are few places where practical knowledge upon tree-growth in towns is more urgently needed. They cannot avoid seeing the miserable results of the attempt to beautify the churchyard by the planting of trees and shrubs—results which might be anticipated from the following accurate criticisms offered by Dr. Babin:—It struck him, he says, from casual observations made in other places, and more particularly in Continental towns, "that the trees recently planted in the Cathedral yard were too small, that they were planted too close to each other, that they had no protection whatever about the stems or roots, nor any provision for collecting or retaining moisture, and lastly, that they were imbedded in a soil which was not congenial to them." We have received from an eye-witness an account of the *modus operandi*—differing but little from that adopted of old by Procrustes towards the unfortunate wretches who fell into his hands—observed in the planting of the unhappy dying or dead Poplars, Rhododendrons, &c., which at present lend an additional melancholy to the Manchester Cathedral yard, and afford scope for the small witticisms of the local comic papers; and we can testify that the end attained is exactly what might have been expected from the means employed. The Manchester city authorities have certainly much to learn with regard to tree planting. It was only the other day that Mr. Faraday, the Secretary of the Manchester Field Naturalists' Society, read a paper on the subject, in which he speaks of yet more recent operations in this direction. Richmond Grove, Longsight, has been flagged, and circular holes have been cut in the flags so that these latter might fit neatly round the trunks of the trees which adorned the margin of the road! The same plan had been adopted towards a tree in the Oxford Road, which is already dying; and Mr. Faraday justly characterised such a proceeding as "spoiling good flags without saving the trees."

The two principal sources of danger to which trees in Manchester are exposed, arise from noxious matter present in the atmosphere, and pernicious to the food taken in by the leaves; and from equally noxious matter permeating the soil and finding its way to the roots. Besides these, Mr. Faraday directs the attention of the Corporation to the ravages of those whom the ardent dendrophilist might term, with Mrs. Leo Hunter, "fiends in shape of boys," who have "literally hacked to pieces" an avenue of Lime trees in the Albert Road. But the conduct of these persevering trees under such adverse circumstances speaks volumes in favour of their suitability for town culture. "Even while suffering from the most frightful wounds," says Mr. Faraday, "the foliage looked fresh and green, and when only a few inches of stump were left protruding from the ground they continued to put out leaves." The Lime, according to Mr. Faraday, is the tree which thrives best in the Manchester district, and this opinion is supported by Mr. R. H. Alcock, who finds that at his residence at Bury, about nine miles north of Manchester, his Limes indicate perfect health. Mr. Grindon gives as a result of the opinions of those whom he consulted a recommendation of the Hawthorn as the tree most likely to thrive under the adverse influences of the Manchester atmosphere; then the Elder, and after that the Plane. There is no doubt that the Plane is a capital London tree, indeed, it shares with the Lime the honour of being considered the most useful tree in the metropolis; but it may be doubted whether it would be equally successful at Manchester; at any rate, six Plane trees planted by Mr. Alcock at Bury, would not grow at all: the last-named gentleman, however, speaks very highly of the Hawthorn. The condition of Victoria Park, Manchester, is very encouraging, in spite of the smoke and noxious emanations to which it is exposed from the more important manufacturing suburbs during the prevalence of east and north winds. "With slight exceptions, the trees all looked well. In the flowering season they were richly adorned and fragrant; and, bearing in mind that the park was comparatively quite a modern creation, their increasingly umbrageous character and fine proportions were subjects for congratulation. The Sycamores were very healthy, and the Elms, Beeches, and Birches showed no symptoms of deterioration; the Ash also was doing well." The experience of practical men is quite opposed to the planting of Poplars in Manchester, although they have been recommended, and are among the present occupants of the cathedral yard. At Bury they make very rapid growth at first, and then die; Mr. Alcock pointed out to us many instances where they had been planted, and in all cases with this result. He has at present two Black Italian Poplars, a Balsam Poplar, and four or five Abeles, which have all been planted within the last six years, and look healthy enough, but he knows from experience that they will soon die, as he has already removed about two score of them. Only a week or two since we observed at the Clifton Junction Station, between Bury and Manchester, a long row of Poplars which, with scarcely an exception, were quite dead. Curiously enough, Mr. Alcock says that "at Gatley, which is about the same distance from Manchester on one side that Bury is on the other, the Poplar in all its sorts grows well; but the climate is quite different, and the flora on the Gatley side of the city is altogether more rich."

The Rhododendron is the shrub which seems to do best in the smoky neighbourhoods of these manufacturing towns. We were at Bury just at the time when these beautiful plants were in full blossom, and we have never seen better examples, either for size and healthiness of the shrubs themselves, or for the magnitude and colour of the trusses of flowers as well as the individual blossoms. With the exception of those in the Manchester churchyard, all that we saw in the district were doing well. Mr. Alcock, after between twenty and thirty years' residence at Bury, says that it will grow satisfactorily even in the most smoky situations, and without any particular care being taken as to the soil in which it is planted, while, curiously enough, at Evesham, in Worcestershire, where the atmosphere is pure and the climate genial, Rhododendrons will not grow. At Bury the Wych Elm, Sycamore, Birch, Horse Chestnut, Turkey Oak, and Beech do well; so do Laburnums and Hollies, but Laurels are not satisfactory. In the neighbourhood of this town, however, the native or quasi-spontaneous tree vegetation shows in many cases the sad effects of smoke. The upper and younger branches are naturally the more early affected, dying off at the tips and showing symptoms of feebleness in growth; while the native vegetation of hedgebanks and roadsides is sparse and monotonous. The small woods and cloughs are often, however, remarkably verdant, owing to the dense undergrowth of Holcus mollis—a Grass which seems to luxuriate in the atmosphere which is fatal to so many other herbs, and literally covers the ground for spaces of considerable extent.

Pilocereus fossulatus (Houlleti) in fruit.

But bad as are the effects of smoke, "worse remains behind." The noxious emanations from alkali and other chemical works are far more disastrous in their effects; and Mr. Edward Green, chief gardener for twenty-five years at Bank Park, Warrington, has recorded with painful accuracy the changes which have been caused during that period by dense smoke and noxious vapours. He has recorded these changes in connection not only with trees but as regarding shrubs and undershrubs; but we shall confine ourselves to such extracts from his notes as concern the former only. Since the development of manufacturing, Conifers have fared the worst. Pinus austriaca is the only Fir which will exist, and even this has failed in many places, while Yew trees which were very healthy fifteen years ago have given way: so that it would appear that Conifers can scarcely exist in a chemically impure atmosphere. We have lately visited Norton, a small village not more than four miles from Runcorn, an important manufacturing town, itself only about eight miles from Warrington: and in company with Mr. Robert Holland, agent to Sir Richard Brooke, of Norton Priory, have inspected different portions of the estate. As is probably known to most of your readers, a Royal Commission is still sitting with the object of investigating the damage which the estate has received from certain alkali works; and the evidences of such damage are painfully apparent to the most casual observer. At Norton, however, the Scotch Fir, as well as the Austrian Pine, is comparatively uninjured by the gases, while Larches will not grow. The Sycamore does well here, at any rate, for a considerable period, and, being a quick grower, soon attains a respectable size; at Warrington, too, according to Mr. Green, it stands moderately well, except in very exposed situations, the several varieties being, however, very dissimilar in constitution. "Different varieties growing side by side have been observed, and year after year the same varieties are affected, those standing best that are earliest in foliage." The Variegated Sycamore, however, is nearly extinct at Warrington, where it has "struggled hard." "I have seen," says Mr. Green, "the leaves reappear three times in one season, after being successively destroyed; under such conditions the tree must eventually succumb. The Horse Chestnut," he continues, "is fast giving way; in early spring the leaves look very promising, but when the winds carry the vapours to them they are severely damaged, and this occurring from time to time, the wood cannot ripen, and the ends of the shoots die." The Lime, which, as we have seen, is proof against the smoke of Manchester and Bury, cannot stand the vapours of Warrington, and suffers in a similar manner, while the Ash, Beech, and Lombardy Poplar, which stood the smoky atmosphere very fairly until a few years ago, have begun to disappear very rapidly before the increased quantity of noxious vapours which has recently been given off from forges and chemical and other works. The Weeping Ash, however, is standing very well, although the common one is fast decaying. Besides the trees just named, the Acacia (Robinia Pseudacacia), Lilac, Common and Portugal Laurels, Laurustinus, Pyrus japonica and Pyracantha may be added to the list of plants which have survived smoke, but have become dead or sickly since the increase of vapours. At Norton, Oaks and Beeches are the principal sufferers; at Warrington, however, two Oaks (Quercus pedunculata and Q. Cerris) are reckoned by Mr. Green among the more hardy trees. Some of the evergreen shrubs are much disfigured by chemical products falling upon them; but smoke is probably quite as disagreeable in this respect. Mr. Green considers that smoke alone does some damage, as the coating of the leaves with carbon prevents the free respiration of the plants, which are found to grow much better when frequent showers wash the dirt off the leaves; plants subject to the exudation known as honeydew, and also some with rough leaves, get coated and suffer most. This was the case in Warrington until there was an increase in sulphurous and other chemical emanations, and then the smooth-leaved trees began to give way. The following is Mr. Green's catalogue of trees and shrubs, planted in Bank Park two or three years ago in an exposed situation. The plants are classified according to their success; they constitute a border 400 yards long, with a west aspect:—(1) Ontario Poplar, English Elm, Alder, Plane, Elder, Privet, Hypericum, Rhododendron, Euonymus japonica, Aucuba, Evergreen Oak, Holly. (2) Birch, Abele, Willow, Sycamore, Turkey Oak, ornamental Thorns, Laburnum, Dogwood, Ailantus glandulosus, Sumach. (3) Double-blossomed Cherry, Lilac, White, Yellow, and Spanish Broom. (4) Ribes, Ash, Acacia, Azalea pontica, Box, Mahonia Aquifolium, Pinus austriaca. (5) Walnut and Flowering Ash (very sickly). (6) Juniper (all dead). The whole of these trees have been exposed to smoke and vapours from a series of works, extending from the south-west to the north-west, the emanations being of a very deleterious character. We trust that the Manchester Field Naturalists will continue to devote attention to this most important subject of the growth of trees in towns; and we shall look with interest for their next report, which we believe will contain much additional information bearing upon the matter in question. J. B.



Pilocereus fossulatus (Houlleti) in flower.

Pilocereus fossulatus (Houlleti).—This is one of the most singular plants in the genus to which it belongs; it is known in some collections as P. Celsianus, but it is a stronger grower than that kind, and is crowned with more and longer tufts of white hair, which, however, on the old plants disappear, vanishing gradually as growth increases. I only once saw its flowers, which closed in about three hours after they first opened. They are blackish-green or mouse-coloured, and are produced nearer the top than in the Cereuses. It likes plenty of sunshine, and will succeed in the temperature of an ordinary greenhouse. Has any one seen the Old Man Cactus (P. senilis) in flower in this country? There is something so weird-looking about these Old Men Cacti that one feels half inclined to question them as to their origin and utility. Their individuality is so striking that to many people they are full of interest.—J. Croucher, *Sudbury House, Hammersmith.*

Bird's-nest in a Human Skull.—The cases of birds building in hothouses recorded in The Garden have brought to my mind an instance perhaps still more remarkable. When at Hockwold Hall in Norfolk, five or six years ago, one of the workmen brought me a human skull, which he had dug up. Owing to the place where it was found, and its peculiar shape, I hung it up in the potting shed on a nail by the wall, when some time after I was surprised to see a wren fly out of it, and on taking it down found that it had built its nest in it, and laid four or five eggs.—F. Tibbett Chilvers, *Hunstanton.*

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Fine-leaved Plants.—One of the greatest evidences of an improved taste in gardening matters is the estimation in which fine-leaved plants are now generally held, so different from the prevailing taste that so long existed in growing little in our greenhouses save blooming subjects, amongst which those producing the most gaudy flowers were often awarded the preference. For room and window decoration, many plants grown for the beauty of their leaves are much better adapted than the majority of flowering subjects, not only for the effect they produce, but, on account of their enduring character. Many amateurs who only possess a cool greenhouse are under the impression that there are comparatively few fine-leaved plants that they can grow, supposing that most of these require a stove or intermediate-house for their cultivation; yet this is by no means the case, as there are numbers of handsome variegated-leaved plants, in addition to those with green foliage, that vie in their elegance of form, or the beautiful colours of their leaves, with many from tropical countries. Amongst the most beautiful of the variegated-leaved subjects suitable for a greenhouse is the Japanese Eurya latifolia variegata, a plant almost hardy in the south of England, but particularly suited for greenhouse culture; the centres of the leaves, which are about the size of those of an Orange, and similar in substance, are bright green, margined with white when fully matured, tinged with red whilst young; the habit of the plant is not unlike that of Croton variegatum, to which it is quite equal in appearance; it is easily grown, succeeding well in either peat or loam, to which a moderate amount of sand has been added. Drain the pots well; as it is a free rooter, care must be taken that it never wants for water. The plant is of a naturally pyramidal habit, branching freely without much shoot pinching. It is little subject to insects, but should be syringed freely with clean water once or twice a week during the growing season to keep it free from red spider, which will sometimes attack it. Whilst small, it is a capital plant for a sunny window.

Abutilons.—A. vexillarium variegatum is a small-leaved, variegated variety, which, in addition to its handsome foliage, bears very attractive flowers. A. Thompsoni has a fine appearance intermixed with flowering subjects on a greenhouse stage; it looks the best for this purpose grown on a single stem some 2 ft. or 2½ ft. in height, in which condition it can be had in a 6-in. or 7-in. pot; both these plants are of the easiest possible growth, succeeding in ordinary loam to which has been added a little leaf-mould and sand; cuttings put in now from half-ripened wood will make plants quite large enough for the above purpose next summer, after which they can be headed down or replaced by young ones annually prepared.

Aralias.—The gold and silver variegated forms of Aralia Sieboldi grown to single stems are handsome plants; they have ample palmate foliage, thrive well in any ordinary soil, and are best raised from cuttings taken off with a heel from plants that have been headed down; they strike readily at any time of the year when procurable 5 in. or 6 in. in length, inserted in small pots in sand, kept moist and covered with a bell-glass in a little heat. A. reticulata is an elegant-growing, handsome-leaved species, of much more slender habit than the preceding; it does well in peaty soil, not requiring so much root-room as the above-mentioned kinds.

Aspidistra lurida variegata.—This is an evergreen herbaceous plant that attains a height of 2½ ft.; the leaves are lanceolate in form, stout and persistent, marked longitudinally with broad bands of green and white in about equal proportions; it is easily increased by division of the roots at any time when not in active growth; it will succeed with the simplest treatment in ordinary garden loam. It is one of the best room plants, the foliage remaining in good condition in an ungenial atmosphere longer than most plants; when so used it should be syringed and sponged occasionally to free it from dust.

Centaureas.—C. argentea, C. Clementei, and C. ragusina associate well with other plants, either in the greenhouse or the window of a living room. Seeds sown at the present time, or within the next two months, will make healthy plants for the ensuing season if grown in any ordinary soil in 6-in. pots.

Coprosma Baueriana variegata is another easily-grown, variegated plant of a somewhat soft-wooded character; for decorative purposes it looks best grown up with a single shoot tied to a neat stick, stopping it from time to time to induce it to break outside branches, which also occasionally should have their points nipped out to produce a sufficiently compact habit; it strikes best from comparatively soft young shoots, produced from branches that have been stopped, taken off with a heel, inserting them, half-a-dozen together, in 4-in. pots in sandy soil in a little warmth, kept moist and covered with a propagating glass; any common soil, to which has been added a little leaf-mould and sand, will answer its requirements.

Phormium tenax variegatum (Variegated New Zealand Flax).—This is a tall-growing, evergreen, herbaceous plant, with leaves not unlike those of the common English Iris; they rise to a height of 4 ft. or 5 ft., and are striped longitudinally with yellowish-white over about one-third the surface, the rest green. From its erect habit of growth it looks well mixed with Pelargoniums, Fuchsias, or other ordinary greenhouse plants, for which purpose it is much better confined to moderate-sized (say 8-in. or 10-in.) pots, than when grown in masses, such as often seen when exhibited. It is easily managed, succeeding perfectly in loam, to which add a little leaf-mould and sand; it is increased by division of the roots, which operation should be performed before growth commences in the spring.

Yuccas.—Y. variegata, Y. quadricolor, and Y. Stokesi, all forms of the Aloe-leaved variegated Yucca, are amongst the best and most enduring of fine-leaved greenhouse plants; the two latter species are of comparatively dwarf habit, and are many years before they get too large for even a small house; they will succeed well in either peat or loam, made sufficiently porous by the addition of sand; they may be increased from suckers, which the plants at times, but not always, throw up from the root; if these be severed in the spring from the parent stock, they will generally be found to have some roots; they should be placed singly in pots just large enough to hold them, and kept if possible in a little warmth until they have commenced growth and got established. Any old specimens that have got naked and bare at the bottom should have their heads taken off either early in the season or at the present time, removing a few of the bottom leaves, inserting in pots sufficiently large to hold them, in a mixture of half sand and loam, keeping them a little confined until they have rooted, but not too moist for fear of causing them to rot; if the portion of stem remaining be cut into pieces 1 in. long, and these be put half their depth in sandy soil in pots placed in a little warmth and kept just moist, they will root through the winter, the stump left will break up from the bottom, or the stool, after heading down, may be allowed to remain, when if the roots just receive enough water to keep the soil slightly moist, it will break out young growths, which, when they have made half-a-dozen leaves each, may be taken off with a heel and struck singly. Y. filamentosa variegata is a very distinct and beautiful plant, and although hardy in some parts of the kingdom, is never so handsome when grown out-of-doors as when in a pot under glass, for the leaves in the open air are short and erect, whereas when cultivated indoors they attain double the length and curve in an elegant manner, the plant altogether growing much larger than outside. Though long in the country, through the great demand there has been for it, it is anything but plentiful, a circumstance in some measure attributable to the majority of people being ignorant as to the best mode of propagating it. Any one possessing a stout plant should now take it out of the pot, shake away the whole of the soil, and then remove all the strongest leaves, cutting them clean away from the underground stem. The thicker roots should then be cut up into pieces 1 in. in length and inserted 1 in. apart in pots drained and filled with a mixture of half sand or loam, or sand and peat, dibbling them in so as to leave nothing above the surface except the extreme upper end; they should then be gently watered and at once placed in a moderate hotbed, or in any house or pit where they will be kept a little warm; in the course of a couple of months they will commence growth, forming small crowns, at the same time making root-fibres; they may thus be kept on growing through the autumn, when they should be moved singly into small pots, or if there be not the means of keeping them during the winter in a temperature of 50° or 60°, they had better not be potted until spring. In the course of the ensuing summer they will make good plants. The old plant thus partially deprived of its roots should immediately be placed in the same or a smaller pot, and put where it will get a little warmth till it is re-established in growth.

Acacias.—Amongst handsome green-leaved subjects suitable for greenhouse decoration may be named Acacia lophantha, a plant with elegant Fern-like leaves, which may be grown to a very large size, but for the purpose under consideration amateurs will find it much more useful confined to a single stem in pots from 6 in. to 8 in. in diameter; it is one of the freest of free growers, doing well in either sandy peat or loam; it can be increased from either seeds or cuttings put in now in a hotbed and kept on growing through the autumn. Aralia crassifolia, A. leptophylla, and A. quinquefolia are all handsome plants; they, too, look the best confined to a single stem, as the leaves are of a persistent nature. If kept clear from insects they will remain fresh down to the base of the plants until they have attained a height of from 3 ft. to 5 ft.; they are not quite so free to strike as some things, but with these, as almost everything else that does not root readily, amateurs will succeed the best by making cuttings of the young shoots that break after a plant has been partially cut down. When these are removed entire from the old wood that has produced them, that is, taken off with a heel, as is understood by this process, few will fail to root; put in small pots, kept warm, and a little moist, and covered with a propagating glass, they will make good plants in a single season.

Dracæna indivisa is a plant of large growth, but one of the most elegant subjects in existence, suitable for occupying a central position in an amateur's greenhouse. If small plants be obtained now or in the spring, and moved on into larger pots as they require it, they will go on for years until they have attained a height of 8 ft. or 10 ft. Evergreen plants of this sort must never be allowed to want for water at the roots; a Geranium or Fuchsia, if left to get so dry as to cause it to flag, although in nowise benefited by it, is generally not much worse; but subjects of this description, whose leaves are of a persistent nature, it causes the lowest near the base to decay and fall off prematurely—a condition which destroys half the beauty of the specimens. This Dracæna should be well syringed on both upper and under sides of the leaves once a week during summer, to prevent the attacks of red spider, to which it is somewhat liable, and which, if allowed to gain a footing, will soon affect the bottom leaves, so as to make the plant bare at the base. Grevillea robusta is another Fern-like plant of the most elegant description, and will succeed well in every way, both as to propagation and after management, if treated as recommended for Aralias.

Lomatias.—L. elegantissima, heterophylla, silaifolia, and ferruginea are all beautiful plants; they are of a hard-wooded, slow-growing nature, and are years before they get too large for even a small house. They are easily grown in loam or peat, but are rather difficult to propagate; cuttings in a half-ripened condition, obtained from shoots that have been cut back, should be taken off with a heel and put singly in small pots in a mixture of sand and peat—keep warm and cover with a bell-glass. They sometimes take months to form roots: when they are plentifully furnished with these, move into pots a size or two larger; they do not at any time require a great amount of root-room.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

August 13.—Sowing Black-seeded Brown Cos, Stanstead Park and All the Year Round Lettuces. Putting in cuttings of Heliotrope, Fuchsia, and Tricolor Pelargoniums. Planting Endive and Lettuce. Preparing soil for Pine-apples; potting and re-arranging the Black Jamaica Pine-apples. Cutting back Laurels and other shrubs overhanging the walks in the pleasure grounds. Stopping the laterals through all the Vineries; watering Celery, Lettuce, Endive, Cabbage, and Walcheren Broccoli, the weather being dry.

Aug. 14.—Sowing Sweet Basil in pots, also Mustard and Cress. Potting a few more Cinerarias and Primulas. Putting in Pelargonium cuttings. Putting one house-full of Smooth-leaved Cayenne Pines into fruiting pots, using equal parts of loam and peat, and adding abundance of silver sand. Mowing. Clearing off Strawberry runners. Watering the Pines all through; also Carrots, Onions, Celery, Lettuces, Endive, Cabbage and Broccoli plants.

Aug. 15.—Sowing Chirk Castle Black Stone Turnips. Potting Cyclamens and Coleus. Putting in a few more Centaurea cuttings. Lifting Ashtop Fluke Potatoes. Thinning Spinach, Lettuce, and Endive. Turning manure previously mixed with salt and soot for general crops. Mowing, weeding, and cleaning in the pleasure grounds. Gathering first out-door Peaches. Watering carpet bedding plants, also the early Peach-house, Scarlet Runner and Dwarf Beans.

Aug. 16.—Potting and re-arranging a large house of Smooth-leaved Cayenne Pines. Putting tiffany over Vinery lights to keep off wasps and flies. Looking over the Peach trees and removing nails, ties, and leaves, where not required. Picking over carpet bedding. Turning manure for a Mushroom bed. Mowing, weeding and clearing in the pleasure grounds. Watering late Peas, Celery, and Strawberry runners on turf.

Aug. 17.—Sowing last crop of Spinach; also Mustard and Cress. Covering the Peach walls with netting. Pulling up all spring-sown Onions and laying them out with the roots upwards to dry. Lifting part of a collection of Potatoes. Clearing off a batch of Broad Beans. Watering Peas, Celery, Lettuce, Endive, and Strawberry runners; also Pines.

Aug. 18.—Potting and putting away Pine suckers. Looking over all the Vineries, and taking off laterals and the shanked berries. Renovating manure linings round all frames. Picking over and weeding the carpet bedding. Cleaning the gravel walks in the kitchen garden. Clearing off a piece of Peas and hoeing the ground ready for other crops. Cleaning up mould-yard, sheds, tools, &c. Fruit in use for dessert:—Pines, Melons, Grapes, Peaches, Figs, Cherries, Pears, and Apples.

SEASONABLE NOTES.

Late Gathering of Rhubarb.—Rhubarb should only be gathered sparingly after this date. I have known plantations seriously injured by clearing off the late crop for wine making. A moment's consideration will assuredly convince any one that a certain amount of foliage is necessary for the healthy development of the buds or eyes for next year's supply.

Sowing Winter Onions.—The first or second week in August is the best period for sowing Winter Onions. A well-drained, well-cultivated plot should be selected, but if in good heart it need not be freshly manured. In addition to the Tripoli varieties, sow a good breadth of Spanish, Globe, and James' Keeping for transplanting early in spring. This is the only plan in difficult situations and seasons to ensure a good crop of large bulbs. South of London the sowing of the three latter kinds I have named may be delayed till towards the end of the month. The Silver-skinned is a good kind also for autumn sowing, as it turns in quickly in spring.

Sowing Winter Spinach.—It is well to make two or three sowings of Winter Spinach at intervals of ten days or so, commencing at the present time. Where the soil is of a heavy, retentive character, at least one of the sowings should be made on the driest and warmest spot available, as it not unfrequently happens, during a wet or cold winter (unless some such precaution be taken) that a great number of the plants will perish. Ground that has not been deeply dug just previous to sowing is usually less retentive of moisture, and consequently warmer in winter than if freshly and deeply stirred. I am speaking of heavy land only. E. Hobday.

MARKET GARDEN NOTES.

Bush Fruits.—These generally have been a fine crop, and are being now cleared off with great rapidity; indeed, ere this appears in print, the bulk will have been marketed. In spite of recent rains the fruit has been gathered in good dry condition, and as a rule, in well-cultivated gardens, it is exceedingly fine. Black Currants are paying well this year, bringing to the grower 3s. 6d. per strike of 16 lb. of fruit. At this price few crops can pay better, as the Black Currant is not only one of the most regular croppers, but is easily cultivated. Fine young clean bushes of about five or six years old, kept well thinned and shortened back, have produced really superb crops; I have seen nothing better as a paying crop this season than long lines of such bushes as these at 6 ft. apart, and single rows of stout Strawberry plants between. Gooseberries sold well whilst green, and although not a heavy crop the berries were exceedingly fine; the ripe fruit is now fetching 3s. 6d. per strike, and selling freely; the favourite sorts are Crown Bob and Lancashire Lad. Red Currants are but sparingly grown in this locality, but as the old fruit gardens around London are being crowded out by builders, the supply will gradually fall off, and more bushes must be planted to meet the inevitable demand; the Houghton Castle is one of the best of all Red Currants for market work. With Red Currants should be grown Raspberries, as both are simultaneously inquired for. One of the very best of all market Raspberries is Northumberland Fillbasket.

Winter Greens.—The proverbial "oldest inhabitant" almost fails to remember a more favourable season for the setting out of Winter Greens than this has been. Curiously enough, also, the greater part of the plants in the seed-beds were comparatively free from the fly in the spring. Potatoes are more commonly intercropped with Winter Greens than are Peas, as the pickers amidst the latter do the young plants considerable mischief; the Peas can also be gathered soon enough to allow the ground to be ploughed and the plants well established for the winter supply. Brussels Sprouts are usually put out at about 3½ ft. apart, with a row of Runner Beans sown between. Brussels Sprouts have little market value unless got out early, and induced by plenty of room and manure to make a very robust growth during the summer. The principal Winter Green crops of the Brassica family grown for market are Brussels Sprouts, Sprouting Broccoli, White Broccoli, Drumhead, Savoy, and Enfield Market Cabbages, and Coleworts; other spare ground is filled with Winter Spinach (a good paying crop, if well grown) and White Turnips. Sowings of both these should be made at once in order to secure a good crop; and if showers continue, it will be possible to have plenty of Turnips ready for winter consumption.

Peas.—The Pea crop has been one of the best known for many years, in spite of late frosts and cold chilling winds. The light showers that fell during the latter part of June, and the heavier rains since, assisted materially to set the bloom and swell the pods. Peas have been fetching various prices, ranging from 3s. to 6s. per bushel, according to time and quality, and the result has always been remunerative. Peas are less time in the ground and are, as a crop, less risky than Potatoes; the earlier kinds are cleared off by the end of the first week in July, and all the main growths by the end of the month, thus leaving the ground at liberty for a second crop quite early in the summer. Sorts do not greatly change, the principal varieties being Sangster's No. 1, Harrison's Glory (a dwarf early round blue), Laxton's Supreme (a robust kind that crops well), and Veitch's Perfection (a tall marrow). The three first kinds are hardy, but deficient in flavour, and are grown chiefly because they are hardy and safe croppers. It is rather singular that so few of our fine dwarf marrows have come into use generally for market cultivation; such excellent garden sorts as Premier, Best of All, Omega, G. F. Wilson, and others, are scarcely known in market gardens, yet they are all good croppers, and, as a rule, more productive than Veitch's Perfection. Perhaps they have not yet been brought down to the market growers' price, or perchance to many they are unheard-of novelties. I have been endeavouring to obviate this want of acquaintance with good dwarf marrows by furnishing some growers with small quantities of sorts that appear to me to be both well suited for market work and superior to the sorts generally grown, and during the present season have induced one grower who sends to market some thousands of bushels annually to sow in an open field several kinds so as to give them the test of field culture. Of these there were included both Laxton's Unique and William the First, the former a dwarf selection from the latter. Perhaps the one is as much too dwarf as the other is too tall, but as Unique can be sown at 20 in. apart, wants but little handling, and is a real first early, I think it is a most useful market kind, in which opinion the grower coincided, and decided upon giving it a trial next year. In immediate succession came Dean's Dwarf Marrow, a new first early marrow of the Advancer type, but dwarfer, hardier, and a better cropper; this grows 20 in. in height, and is of the finest quality. Of other kinds in immediate succession came Robert Fenn, Dr. Maclean, Premier, James's Prolific, East Anglian, Market Favourite, and Omega. Of these East Anglian and Market Favourite are nearly allied to Supreme, and are of similar quality; Robert Fenn is a very large-podded, dwarf marrow, 20 in. in height, a heavy cropper, and of the finest flavour, evidently well suited for the market. In the field Dr. Maclean grows 2½ ft. in height, as does also Premier; these Peas closely assimilate in general character, but Dr. Maclean has rather longer pods; both, however, proved to be fine market Peas. James's Prolific, although productive of fine pods, affords but one good picking in the field; Omega, on the contrary, is a first-class late Pea. 2 ft. in height, crops heavily, the pods rich deep green, well filled, and of fine flavour. Dean's Dwarf Marrow and Robert Fenn are not yet in commerce; but Dr. Maclean, Premier, and Omega may be safely recommended as good market marrows. A. D.

PLATE LXXXVI.

LILIUM THOMPSONIANUM.

It may surprise some to be told that the plant of which the annexed is a representation is sometimes a Lily, and sometimes a Fritillary. It has been alternately referred to the genera Lilium and Fritillaria by different botanists, and even now it is doubtful whether it has found a permanent resting-place; it is one of those plants which puzzle botanists, and it illustrates the fact that it is often as difficult to characterize genera as it is to define species. It reminds us that there are no hard and fast lines in Nature, and that all Orders, Genera, and Species are more or less artificial, and liable to be disturbed in their limitations by new forms found in a wild state or raised in gardens. Admitting this law, we must also recognize the fact that all definitions of groups of plants of whatever degree are more or less arbitrary, according to the views of their authors; therefore, when we get a plant like the present, which is intermediate in character between two otherwise easily-defined genera, botanists are almost certain to disagree as to what it should be called. For convenience it must have a name, and in giving it a name several things have to be considered—amongst others, whether, seeing that it is intermediate between two previously distinct genera, these two genera should be united; whether a new genus should be established for this troublesome plant; or whether it should be referred to one of the existing genera. And the proper course to be followed appears to be that which least upsets existing nomenclature or unduly increases the number of genera. Our plant was originally described by David Don ("Prodromus Floræ Nepalensis") as Fritillaria macrophylla, and Mr. Baker, in his revision of the Tulipeæ ("Linnean Society's Journal," vol. xiv.), retains this name for it, placing it in a sub-genus having the floral characters of Lilium and the scariously-coated bulbs and distinctly three-lobed style of Fritillaria. Messrs. Loddiges imported and flowered it about the year 1844, and it was figured in the "Botanical Register" under the name of Lilium Thompsonianum. Previously, however, D. Don had described a second variety or state in Royle's "Illustrations of Indian Plants," t. 92, as Fritillaria Thompsoniana. Some years after its first appearance in English gardens, Strachey re-introduced it from the Himalaya Mountains, where it occurs up to an elevation of 8000 ft.; and in 1853 it flowered at Kew, and was figured in the "Botanical Magazine," t. 4725, as Lilium roseum. Although the figures quoted represent different varieties, it was not disputed that they should be referred to one and the same species; hence the value of this somewhat complicated synonymy to Lily growers. In different collections some of these various names are still in use, and there is always a risk of purchasing or otherwise obtaining at some trouble a plant that one already possesses under another name, unless one knows that certain names belong to the same species. With limited means or space it is vexing to be taken in in this way. Respecting the development of the bulb of this species and its propagation from bulblets, Duchartre has written very fully in the "Annales des Sciences Naturelles," sérié 5, vol. xvi., and his paper is illustrated with three plates. Mr. Baker's description, drawn up from a number of dried and living plants, will aid in giving an idea of the general range of variability of this species:—Bulb ovoid, 1 in. thick, clothed with several scarious coats 2 in. or more in length, striped on the outside, and bearing bulblets in their axils; stem 1½ ft. to 3 ft. high, erect, round, and smooth; leaves twenty to thirty, directed upwards, narrow, bearing bulblets in their axils, lower ones crowded, 12 in. to 18 in. long, 3 lines to 4 lines broad, upper ones looser and shorter; flower-spike 12 in. to 18 in. long, bearing six to thirty flowers; flowers, when expanded, 3 in. to 4 in. across, lower ones nodding, upper ones smaller, half erect; a native of Afghanistan and the North-west Himalayas. There is only one other species of this sub-genus (F. Hookeri), and this is very closely allied, differing more in size and in the shape of the perianth segments than in anything else. This is a native of Sikkim Himalaya, where Dr. Hooker collected it at an altitude of from 9000 ft. to 10,000 ft.

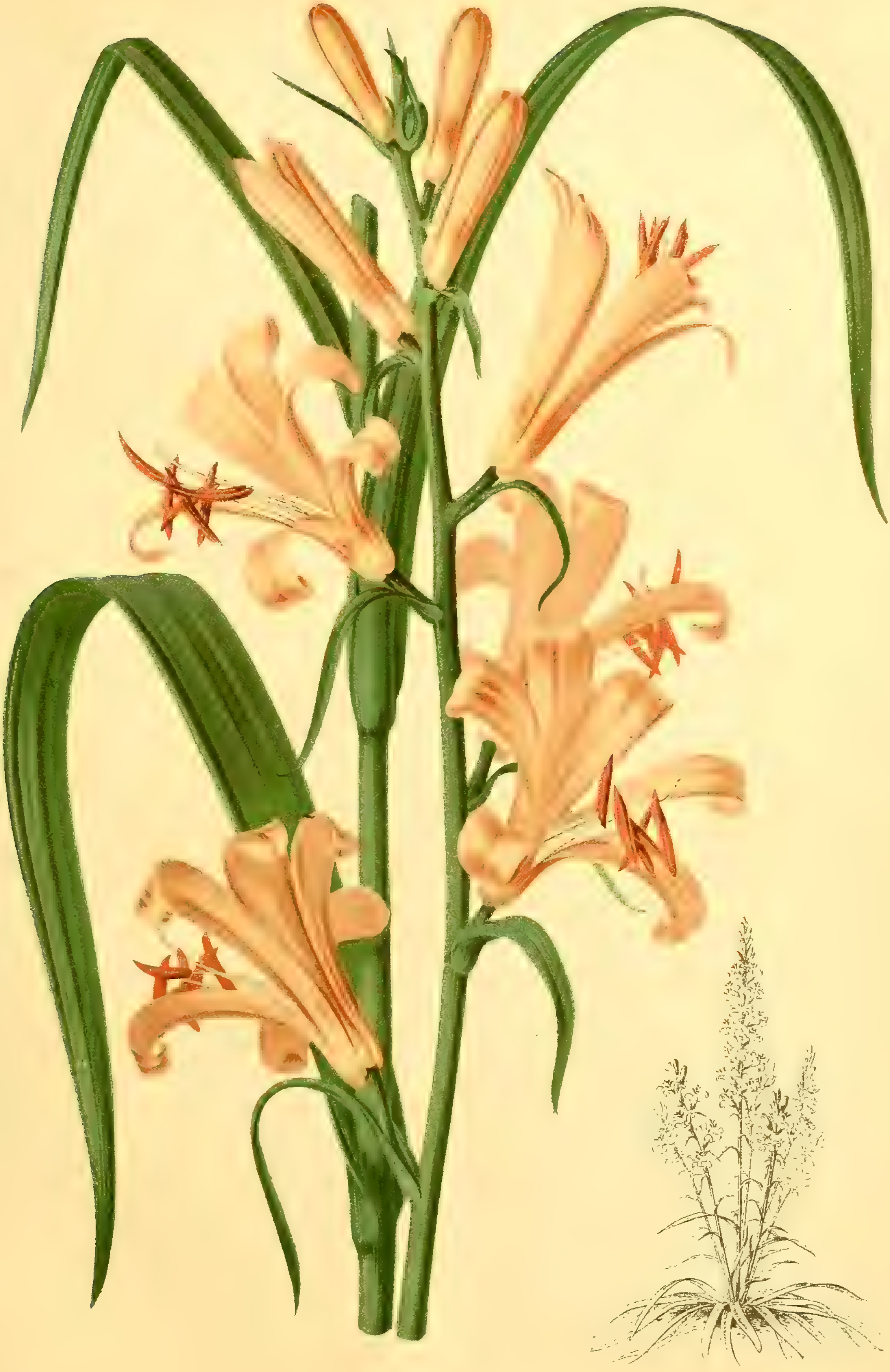
W. B. Hemsley.

Concerning the cultivation of this Lily, Dr. Wallace of Colchester writes to us as follows:—As there has been a difficulty experienced in flowering this Lily in Europe, I subjoin a communication from a correspondent, since dead, in which its native habitat and mode of growth are described. The elevation of the locality of Lilium roseum (Thompsonianum) about Mussoorie varies from 5000 ft. to 6000 ft. on the outer or southern spurs running down towards the plains. Latitude about 26° N. The temperature of these slopes in March and April, which is the flowering season of this species, is frequently very warm, and the earth, from the rocky nature of the soil, retains considerable heat. At this season refreshing showers are usually frequent. The plants are always as a rule found growing upon the slopes, and I might say never in flat ground. The surface-soil to a depth of from 2 in. to 3 in. is a rich vegetable mould composed of decayed leaves and grasses, acting like a top-dressing; beneath this is a bed of small broken fragments of limestone, through which the flower-stalks descend to the bulb, which is formed in what may be termed a fine limestone sand. This becomes from the bulb upwards to the surface coarser and coarser, the bulb lying at various depths, sometimes near the surface and sometimes 4 in. or 5 in. deep. From the slope of the hillside and the porous nature of the soil the drainage is perfect, but the sand is by no means so dry as to be devoid of moisture. Some European cultivators are inclined to cavil at my saying that these bulbs do not thrive well in earth, although at the same time they prove me to be correct, from their statement that their bulbs so treated are annually exhausted and rot away, leaving only a number of small bulblets in their place. Now I did not mean to assert that this bulb can never be reared in earth, because I have myself sometimes succeeded in doing so: but then the soil was carefully kept from too much moisture. I can but record what I see to be the mode of treatment to which Nature resorts, and I do not seek to improve or teach her. The natural soil is a fine, highly porous, limestone gravel, becoming a limestone sand as it descends; it is often hundreds of feet deep, and beneath it runs a belt of greenstone, by which when the hills were upraised the limestone was crushed into fragments of every size, and in some places, instead of the limestone, we encounter an outcrop of greenstone, or a deep bed of finely-comminuted Lydian stone. Nature then points out that the proper soil for this species is a porous limestone gravel, with a top-dressing of fine, rich vegetable mould; but if, disregarding her instructions, we plant the bulb in a rich earth and on a flat surface, the moisture being greater than the plant requires, the bulb rots away and expends its strength in flowers and bulblets. This year I planted several roots of full size in good earth, and nearly the whole rotted away, leaving plenty of offspring, but the flowers were poor; others planted in poor, stony soil, and sheltered, gave good flowers, and all remained sound. Now they are all in limestone sand, and for the future will remain so. In this soil they remain exposed to the full force of the wet monsoon, from the beginning of June to the end of September, and although the rain descends sometimes for a week together in a perfect deluge, such is the porous nature of the soil that the Lilies thrive and remain uninjured. When once they are found to succeed in their own soil, let them alone, for I hold that the system of digging them up every autumn is injurious and wrong; they will stand any amount of cold, and are sometimes covered for a month or more with 2 ft. of snow. Left in their natural soil, and if possible on a slope among long coarse Grass and dwarf shrubs, the bulbs, far from rotting, will annually increase in size until full grown, throwing off numerous bulblets, while the flowers produce an abundance of seed. Cultivators at home are far too fond of coddling, forcing, and manipulating.

The plant was figured in the "Revue Horticole," and our plate was made after M. Riocreux's original drawing, acquired from the proprietors for this purpose.

The Cut-leaved Birch.—Mr. W. C. Barry, of Rochester, New York, who is now travelling in this country, tells us of his surprise in not noticing examples of this valuable tree in our gardens. It is a very graceful and remarkable tree at Rochester, a specimen having already attained a height of 40 ft. Five thousand trees of it are annually worked in the Mount Hope Nurseries at Rochester (Messrs. Elwanger & Barry's).

Supplement to *The Garden* [illegible] 37 Southampton Street Covent Garden London [illegible]



LILIUM THOMPSONIANUM

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 112).

Strawberry.

(1) *Iago.* Have you not sometimes seen a handkerchief
Spotted with Strawberries in your wife's hand?
Othello, act iii., sc. 3.

(2) *Ely.* The Strawberry grows underneath the Nettle
And wholesome berries thrive and ripen best
Neighboured by fruit of baser quality;
And so the prince obscured his contemplation
Under the veil of wildness.
Henry V., act i., sc. 1.

(3) *Glo'ster.* My Lord of Ely, when I was last in Holborn,
I saw good Strawberries in your garden there:
I do beseech you send for some of them.
Ely. Marry, and will, my lord, with all my heart.

. . . . . .

Where is my lord protector? I have sent
For these Strawberries.
King Richard III., act iii., sc. 4.

The Bishop of Ely's garden in Holborn must have been one of the chief gardens of England in the fourteenth and fifteenth centuries, for this is the third time it has been brought under our notice; it was celebrated for its Roses (see Rose); it was so celebrated for its Saffron Crocuses that part of it acquired the name, which it still keeps, Saffron Hill; and now we hear of its "good Strawberries," while the remembrance of "the ample garden," and of the handsome Lord Chancellor, to whom it was given when taken from the bishopric, is still kept alive in its name of Hatton Garden. How very good our forefathers' Strawberries were, we have a strong proof in old Isaak Walton's happy words: "Indeed, my good scholar, we may say of angling as Dr. Boteler said of Strawberries—'Doubtless God could have made a better berry, but doubtless God never did;' and so, if I might be judge, God never did make a more calm, quiet, innocent recreation than angling." I doubt whether, with our present experience of good Strawberries, we should join in this high praise of the Strawberries of Shakespeare's or Isaak Walton's day, for their varieties of Strawberry must have been very limited in comparison to ours. Their chief Strawberry was the wild Strawberry brought straight from the woods, and no doubt much improved in time by cultivation. Yet we learn from Tusser that it was the custom to grow it just as it came from the woods.

Wife, into thy garden, and set me a plot
With Strawberry roots of the best to be got:
Such growing abroad, among Thorns in the wood,
Well chosen and picked, prove excellent food.

. . . .

The Gooseberry, Respis, and Rose all three
With Strawberries under them trimly agree.
September's Husbandry.

Besides the wild one (Fragaria visca), they had the Virginian (F. virginiana), a native of North America, and the parent of our scarlets; but they do not seem to have had the Hautbois (F. elatior), or the Chilian, or the Carolinas, from which most of our good varieties have descended.

As a fruit the Strawberry is among fruits what the Primrose and Snowdrop are among flowers, the harbinger of other good fruits to follow. It is the earliest of the summer fruits, and there is no need to dwell on its delicate, sweet-scented freshness, so acceptable to all; but it has also a charm in autumn, known, however, but to few, and sometimes said to be only discernible by few. Among "the flowers that yieldeth sweetest smell in the air," Lord Bacon reckoned Violets, and "next to that is the Musk-rose, then the Strawberry leaves dying, with a most excellent cordial smell." In Mrs. Gaskell's pretty tale, "My Lady Ludlow," the Strawberry leaves act an important part. "The great hereditary faculty on which my lady piqued herself, and with reason, for I never met with any other person who possessed it, was the power she had of perceiving the delicious odour arising from a bed of Strawberry leaves in the late autumn, when the leaves were all fading and dying." The old lady quotes Lord Bacon, and then says:—"'Now the Hanburys can always smell the excellent cordial odour, and very delicious and refreshing it is. In the time of Queen Elizabeth the great old families of England were a distinct race, just as a cart-horse is one creature and very useful in its place, and Childers or Eclipse is another creature, though both are of the same species. So the old families have gifts and powers of a different and higher class to what the other orders have. My dear, remember that you try and smell the scent of dying Strawberry leaves in this next autumn, you have some of Ursula Hanbury's blood in you, and that gives you a chance.' 'But when October came I sniffed, and sniffed, and all to no purpose; and my lady, who had watched the little experiment rather anxiously, had to give me up as a hybrid'" ("Household Words," vol. xviii.). On this I can only say in the words of an old writer, "A rare and notable thing, if it be true, for I never proved it, and never tried it; therefore, as it proves so praise it."

There is a considerable interest connected with the name of the plant, and much popular error. It is supposed to be called Strawberry because the berries have straw laid under them, or from an old custom of selling the wild ones strung on straws. In Shakespeare's time straw was used for the protection of Strawberries, but not in the present fashion.

If frost do continue, take this for a law
The Strawberries look to be covered with straw,
Laid evenly trim upon crotches and bows,
And after uncovered as weather allows.
Tusser—"December's Husbandry."

But the name is much more ancient than either of these customs. Strawberry in different forms, as Strea-berige, Streaberie-wisan, Streaw-berige, Streaw-berian wisan, Streberilef, Strabery, Strebere-wise, is its name in the old English vocabularies, while it appears first in its present form in a pictorial vocabulary of the fifteenth century, "Hoc ffragrum, A^{ce} a Strawbery." What the word really means is pleasantly told by a writer in Seeman's "Journal of Botany," 1869:—"How well this name indicates the now prevailing practice of English gardeners laying straw under the berry in order to bring it to perfection, and prevent it from touching the earth, which without that precaution it naturally does, and to which it owes its German name *Eidbeere*, making us almost forget that in this instance 'straw' has nothing to do with the practice alluded to, but is an obsolete part-participle of 'to strew,' in allusion to the habit of the plant." This obsolete word is preserved in our English Bibles, "gathering where thou hast not strawed," and in Shakspeare—

The bottom poison, and the top o'erstrawed
With sweets.
Venus and Adonis.

From another point of view there is almost as great a mistake in the second half of the name, for in strict botanical language the fruit of the Strawberry is not a berry; it is not even "exactly a fruit, but is merely a fleshy receptacle bearing fruit, the true fruit being the ripe carpels, which are scattered over its surface in the form of minute grains looking like seeds, for which they are usually mistaken, the seed lying inside of the shell of the carpel." It is exactly the contrary to the Raspberry, a fruit not named by Shakespeare, though common in his time under the name of Rasps. "When you gather the Raspberry you throw away the receptacle under the name of core, never suspecting that it is the very part you had just before been feasting upon in the Strawberry. In the one case the receptacle robs the carpels of all their juice in order to become gorged and bloated at their expense; in the other case the carpels act in the same selfish manner upon the receptacles" (Lindley, "Ladies' Botany.")

Shakespeare's mention of the Strawberry and the Nettle (No. 2) deserves a passing note. It was the common opinion in his day that plants were affected by the neighbourhood of other plants to such an extent that they imbibed each other's virtues and faults. Thus sweet flowers were planted near fruit trees with the idea of improving the flavour of the fruit, and evil-smelling trees, like the Elder, were carefully cleared away from fruit trees, lest they should be tainted. But the Strawberry was supposed to be an exception to the rule, and was supposed to thrive in the midst of "evil communications" without being corrupted. Preachers and emblem-writers naturally seized upon this—"In tilling our garden we cannot but admire the fresh innocence and purity of the Strawberry, because although it creeps along the ground, and is continually crushed by serpents, lizards, and other venomous reptiles, yet it does not imbibe the slightest impression of poison, or the smallest malignant quality, a true sign that it has no affinity with poison. And so it is with human virtues," &c. "In conversation take everything peacefully, no matter what is said or done. In this manner you may remain innocent amidst the hissing of serpents, and, as a little Strawberry, you will not suffer contamination from slimy things creeping near you" (S. Francis de Sales).

I need only add that the Strawberry need not be confined to the kitchen garden, as there are some varieties which make very good carpet plants, such as the variegated Strawberry, which, however, is very capricious in its variegation; the double Strawberry, which bears pretty white button-like flowers; and the Fragaria lucida from California, which has very bright shining leaves, and was, when first introduced, supposed to be useful in crossing with other species; but I have not heard that this has been successfully effected.

Sweet Marjoram (see Marjoram).

Sycamore.

(1) *Desdemona* (singing). A poor soul sat sighing by a Sycamore tree.
Othello, act iv., sc. 3.

(2) *Benvolio.* Underneath the grove of Sycamore
That westward roveth from the city's side,
So early walking did I see your son.
Romeo and Juliet, act i., sc. 1.

(3) *Boyet.* Under the cool shade of a Sycamore
I thought to close mine eyes for half an hour.
Love's Labour's Lost, act v., sc. 2.

In its botanical relationship, the Sycamore is closely allied to the Maple, and was often called the Great Maple, and is still so called in Scotland. It is not indigenous in Great Britain, but it has long been naturalized among us, and has taken so kindly to our soil and climate that it is one of our commonest trees. The history of the name is curious. The Sycamore, or Zicamine tree of the Bible and of Theophrastus and Dioscorides, is the Fig-mulberry, a large handsome tree indigenous in Africa and Syria, and largely planted, partly for the sake of its fruit, and especially for the delicious shade it gives. With this tree the early English writers were not acquainted, but they found the name, and applied it to any shade-giving tree. Thus in Ælfric's Vocabulary in the tenth century it is given to the Aspen—"Sicomorus vel celsa æps." Chaucer gives the name to some hedge shrub, but he probably used it for some thick shrub, without any very special distinction—

> The hedge also that yedde in compas
> And closed in all the greene herbere
> With sicamour was del and eglateere
> Wrethen in fere so well and cunningly
> That every branch and leafe grew by measure
> Plaine as a bord, of an height by and by.
> *The Flower and the Leaf.*

Our Sycamore would be very ill suited to make the sides and roof of an arbour, but before the time of Shakespeare it seems certain that the name was attached to our present tree, and it is so called by Gerarde and Parkinson.

The Sycamore is chiefly planted for its rapid growth rather than for its beauty. It becomes a handsome tree when fully grown, but as a young tree it is stiff and heavy, and at all times it is so infested with honeydew as to make it unfit for planting on lawns or near paths. It grows well in the north, where other trees will not well flourish, and "we frequently meet with the tree apart with the fields, or unawares in remote localities amidst the Lammermuirs and the Cheviots, where it is the surviving witness of the former existence of a hamlet there. Hence to the botanical rambler it has a more melancholy character than the Yew. It throws him back on past days, when he who planted the tree was the owner of the land and of the Hall, and whose name and race are forgotten even by tradition. . . . And there is reasonable pride in the ancestry when a grove of old gentlemanly Sycamores still shadows the Hall" (Johnstone). But these old Sycamores were not planted only for beauty: they were sometimes for a very unpleasant use. "They were used by the most powerful barons in the west of Scotland for hanging their enemies and refractory vassals on, and for this reason were called *dool* or grief trees. Of these there are three yet standing, the most memorable being one near the fine old castle of Cassilis, one of the seats of the Marquis of Ailsa, on the banks of the River Doon. It was used by the family of Kennedy, who were the most powerful barons of the west of Scotland for the purpose above mentioned" (Johns).

The wood of the Sycamore is useful for turning and a few other purposes, but is not very durable. The sap, as in all the Maples, is full of sugar, and the pollen is very curious; "it appears globular in the microscope, but if it be touched with anything moist, the globules burst open with four valves, and then they appear in the form of a cross" (Miller).

Thistle (see also Holy Thistle).

(1) *Burgundy.* And nothing teems
But hateful Docks, rough Thistles, Kecksies, Burs.
Henry V., act v., sc. 2.

(2) *Bottom.* Good, Monsieur Cobweb, good, monsieur; get your weapons ready in your hand, and kill me a good red-hipped humble bee on the top of a Thistle, and, good monsieur, bring me the honey-bag.
Midsummer Night's Dream, act iv., sc. 1.

Thistle is the old English name for a large family of plants occurring chiefly in Europe and Asia, of which we have fourteen species in great Britain, arranged under the botanical families of Carlina, Carduus, and Onopordon. It is the recognised symbol of untidiness and carelessness, being found not so much in barren ground as in good ground not properly cared for. So good a proof of a rich soil does the Thistle give, that a saying is attributed to a blind man who was choosing a piece of land—"Take me to a Thistle;" and Tusser says—

> Much wetness, hog-rooting, and land out of heart
> Makes Thistles a number forthwith to upstart;
> If Thistles so growing prove lusty and long,
> It signifieth land to be hearty and strong.
> *October's Husbandry.*

If the Thistles were not so common, and if we could get rid of the associations they suggest, there are probably few of our wild plants that we should more admire: they are stately in their foliage and habit, and some of their flowers are rich in colour, and the Thistledown, which carries the seed far and wide, is very beautiful, and was once considered useful as a sign of rain, for "if the down flyeth off Coltsfoot, Dandelyon, or Thistles when there is no winde, it is a signe of rain" (Coles). But it is owing to these pretty Thistledowns that the plant becomes a most undesirable neighbour, for they carry the seed everywhere, and wherever it is carried, it soon vegetates, and a fine crop of Thistles very quickly follows. In this way, if left to themselves, the Thistles will soon monopolize a large extent of country, to the extinction of other plants, as they have done in parts of the American prairies, and as they did in Australia, till a most stringent Act of Parliament was passed about twenty years ago, imposing heavy penalties upon all who neglected to destroy the Thistles on their land. For these reasons we cannot admit the Thistle into the garden, at least, not our native Thistles; but there are some foreigners which may well be admitted. There is the Fish-bone Thistle (Chamæpeuce diacantha) from Syria, a very handsome plant, and, like most of the Thistles, a biennial; but if allowed to flower and go to seed, it will produce plenty of seedlings for a succession of years. And there is a grand scarlet Thistle from Mexico, the Erythrolena conspicua ("Sweet," vol. ii., p. 134), which must be almost the handsomest of the family, and which was grown in England fifty years ago, but has been long lost. There are many others that might easily deserve a place as ornamental plants, but they find little favour, for "they are only Thistles."

Any notice of the Thistle would be imperfect without some mention of the Scotch Thistle. It is the one point in the history of the plant that protects it from contempt. We dare not despise a plant which is the honoured badge of our neighbours and relations, the Scotch; which is ennobled as the symbol of the Order of the Thistle, that claims to be the most ancient of all our Orders of high honour, and which defies you to insult it or despise it by its proud mottoes, "Nemo me impune lacessit," "Ce que Dieu garde, est bien gardé." What is the true Scotch Thistle even the Scotch antiquarians cannot decide, and in the uncertainty it is perhaps safest to say that no Thistle in particular can claim the sole honour, but that it extends to every member of the family that can be found in Scotland.

Shakespeare has noticed the love of the bee for the Thistle, and it seems that it is for other purposes than honey gathering that he finds the Thistle useful. For "a beauty has the Thistle, when every delicate hair arrests a dew-drop on a showery April morning, and when the purple blossom of a roadside Thistle turns its face to Heaven and welcomes the wild bee, who lies close upon its flowerets on the approach of some storm cloud until its shadow be past away. For with unerring instinct the bee well knows that the darkness is but for a moment, and that the sun will shine out again ere long" (Lady Wilkinson).

Thorns.

(1) *Ariel.*
Through toothed Briars, sharp Furzes, pricking Goss and Thorns,
Which entered their frail skins.
Tempest, act iv., sc. 1.

2) *Quince.* Some one must come in with a bush of Thorns and a lanthorn, and say he comes in to disfigure or to present the person of moonshine.
Midsummer Night's Dream, act iii., sc 1.

(3) *Puck.* For Briers and Thorns at their apparel snatch.
Ibid., act iii., sc. 2.

(4) *Prologue.* This man with lanthorn, dog, and bush of Thorns
Preventeth moonshine.
Ibid., act v., sc. 1.

(5) *Thorn.* All that I have to tell you is that the lanthorn is the moon; I the man in the moon; this Thorn bush, my Thorn bush; this dog, my dog. *Ibid.*

(6) *Dumain.* But alack! my hand is sworn
Never to pluck thee from the Thorn.
Love's Labour's Lost, act iv., sc. 3.

(7) *Carlisle.* The woe's to come; the children yet unborn
Shall feel this day as sharp to them as Thorns.
Richard II., act iv., sc. 1.

(8) *King Henry.* The care you have of us
To mow down Thorns that would annoy our foot
Is worthy praise.
2nd Henry VI., act iii, sc. 1.

(9) *Gloucester.* And I, like one lost in a Thorny wood,
That rends the Thorns and is rent with the Thorns,
Seeking a way, and straying from the way.
3rd Henry VI., act iii., sc. 2.

(10) *King Edward.* Brave followers, yonder stands the Thorny wood.
Ibid., act v., sc. 4.

(11) *King Edward.* What! can so young a Thorn begin to prick.
Ibid., act v, sc. 4.

(12) *Romeo.* Is love a tender thing? It is too rough,
Too rude, too boisterous, and it pricks like Thorn.
Romeo and Juliet, act i., sc. 4.

(13) *Boult.* A Thornier piece of ground.
Pericles, act iv., sc. 6.

(14) *Leontes.* Which being spotted
Is goads, Thorns, Nettles, tails of wasps.
Winter's Tale, act i., sc. 2.

(15) *Florio.* But O, the Thorns we stand upon.
Ibid., act iv., sc. 3.

(16) *Ophelia.* Do not, as some ungracious pastors do,
Shew me the steep and the Thorny path to Heaven.
Hamlet, act i., sc. 5.

(17) *Ghost.* Leave her to Heaven,
And to those Thorns that in her bosom lodge
To prick and sting her.
Ibid., act i., sc. 5.

(See also Rose Nos. 6, 18, 22, 30, the scene in the Temple gardens, and Brier No. 11).

Thorns and Thistles are the typical emblems of desolation and trouble, and so Shakespeare uses them; and had he spoken of Thorns in this sense only, I should have been doubtful as to admitting them among his other plants, but as in some of the passages they stand for the Hawthorn tree and the Rose bush, I could not pass them by altogether. They might need no further comment beyond referring for further information about them to Hawthorn, Briar and Rose, and Bramble, but in speaking of the Bramble I mentioned the curious legend which tells why the Bramble employs itself in collecting wool from every stray sheep, and I find a very curious account of another unexpected connection between Thorns and wool. The original document is given in Latin, in Blount's "Antient Tenures," and is dated 39th, Henry III. It may be thus translated:—"Peter de Baldwyn holds in Combes, in the county of Surrey, by the service to go a wool gathering for our Lady the Queen among the White Thorns, and if he refuses to gather it he shall pay into the Treasury of our Lord the King xxs. per annum." I should almost suspect a false reading, as the editor is inclined to do, but that many other services, equally curious and improbable, may easily be found.

H. N. Ellacombe.

(To be continued).

USEFUL WINTER FLOWERING PLANTS.

Allow me to give for the guidance of some of your readers a small selection of useful winter-flowering plants that are quick-growing, easily cultivated, showy, and soft-wooded, that anybody can grow with only moderate conveniences in the way of glass structures. Most of them are commonly classed in catalogues as stove plants, but with a close warm pit or low house to propagate and grow them on till July, and with a cold pit or some freely-ventilated structure to mature their growth during summer, they will flower freely and well during winter in a warm greenhouse or conservatory. If very large specimens be required, a few plants of the previous year may be cut back in March and grown on for that purpose; but for most of the decorative purposes for which such plants are applicable, cuttings struck in February will produce plants large enough, and give less trouble, and be in every way more satisfactory than saving the old plants; furthermore, if it be required to fill a large vase, and one plant is not sufficient, three or more may be used. It is scarcely necessary to enter into details, as any one who can grow a Fuchsia or Zonal Pelargonium will meet with no difficulty. The main features in their successful culture are to put the cuttings in as early as possible, selecting good healthy shoots, and as soon as they are rooted, pot them off, and when the roots have become active again, pinch out the leader, and continue potting on and pinching as often as necessary, giving the last shift not later than the end of July, or if they be needed for early autumn blooming, then they should not be potted after the beginning of that month. Equal portions of sandy turfy loam and peat—or if peat be difficult to procure, leaf-mould will answer equally as well—with a sprinkling of sand, to ensure the necessary porosity in the soil, as they will require to be watered freely. The last-named—Manettia bicolor—is a small neat creeper, well adapted for planting round the edges of wire baskets, and should be allowed to hang gracefully about over the sides. The following is the selection referred to above:—Hebeclinium ianthinum, Thyrsacanthus rutilans, Begonia insignis, manicata, and fuchsioides, Justicia speciosa, Linum trigynum, Stevia Lindleyana, Eranthemum pulchellum and strictum, Plumbago rosea, Pentas carnea, and Manettia bicolor.

E. Hobday.

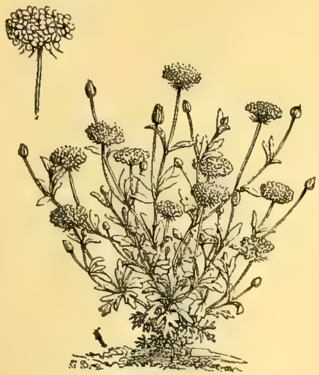
A Good Time Coming.—Consumers and the better class of growers have long laboured to have fruits sold on some honest plan, by which uniform quality and correct measure could be insisted on in the fruit package. The Common Council of Chicago have just passed a wise ordinance, so that the honest growers and the dishonest commission men, if indeed there be any of the latter, may in the one case be protected and in the other be punished. The dishonest dealer will no longer be allowed to sell pints for quarts, nor honest-looking boxes at top filled as to the interior and bottom with fruit rotten or inferior to that at the surface; no longer may gnarled and wormy Apples, with a veneering of sound fruit on top, be palmed off upon the unsuspecting purchaser as sound to the core; Peach baskets containing a fraction of a peck may no more be sold three for a bushel to the fruit-loving citizen. The ordinance provides first, that "it shall be unlawful for any person to sell or offer for sale fruits or berries within the City of Chicago except by the barrel, bushel, or some aliquot part of a bushel, according to the table of dry measures, nor shall it be lawful to sell fruit or berries in packages, except every such package contains a barrel, a bushel, or some aliquot part of a bushel, according to the table of dry measures; and, in the second place, that all fruits or berries, fresh or dried, sold or offered for sale in the City of Chicago in packages, shall be of equal goodness in every part of the package." —"Prairie Farmer."

HARDY FLOWERS OF THE WEEK.

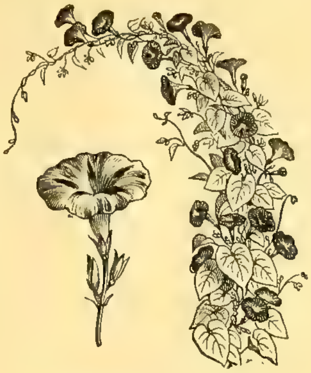
Many of the autumnal flowers are fast opening; the white, red, and pink varieties of Anemone japonica are fairly sprinkled with flowers; the Mexican Dahlias are brilliant, their rich, abundant foliage, and large, bright-coloured blossoms, rendering them very attractive, far more so than Dahlia viridiflora, that curious monstrosity, which is at present covered with blossoms. The hardy Fuchsias are now very gay, especially F. simplicifolia, Riccartoni, pumila, globosa, gracilis, and several more; in many places in the west and south of England they are used for making hedges. Veronica salicifolia, a neat little shrub, with narrow, lanceolate foliage, and abundance of white flowers in spikes, is very pretty; it is one of the hardiest of the shrubby section. Œnothera speciosa, one of the finest of the Evening Primroses, and one of the best of border plants, is now literally covered with its large, white flowers. Many of the Gypsophilas, especially G. prostrata and G. muralis, are well worth cultivation, the numerous white flowers on slender stems presenting a graceful appearance. Gillenia trifoliata (Spiræa) has a peculiar and very pleasing effect; it is a stiff, much-branched little bush, with small foliage, and covered with showy, pure white flowers. Buphthalmum salicifolium (a showy Composite with yellow flowers), and the old Coreopsis lanceolata, are both flowering luxuriantly. Harpalium rigidum (Helianthus) is one of the best of the Sunflower family, with immense golden-yellow flowers 4 in. in diameter; the golden spikes of Asphodelus tauricus are striking, the abundant Grass-like foliage setting the plant off to great advantage. Many of the Aconitums are very good, their deep purplish-blue flowers being an acquisition at this time of the year; one of the best blues in flower is the old Anchusa italica, indispensable for cutting. Helenium autumnale (with full, deep yellow flowers), and Helenium grandicephalum (yellow splashed with crimson), are both good. Potentilla fruticosa, a shrubby species with yellow flowers, is very distinct. Centaurea Phrygia has a neat, dwarf habit, producing purple flowers freely; but the best of this group is C. aurea, the tassel-like flowers of which make up well in bouquets. Geum coccineum fl.-pl. is now a sheet of brilliant, scarlet flowers, and so is the old double Lychnis (L. chalcedonica fl.-pl.) invaluable for cutting purposes, and the more it is cut the more it flowers. Many of the Campanulas are still a mass of flower, notably the new varieties of C. turbinata, nobilis, nobilis alba, Hendersoni, rotundifolia fl.-pl., Hosti alba, and many of the dwarf varieties of the Garganica section. Liatris spicata and L. macrostachya, with stiff, dense spikes of purple flowers, are both good; they last a long time in bloom. Asteriscus maritimus, a tender Composite with golden-yellow flowers, would make a fine bedding plant; also Agathæa cœlestis (Cape Aster), lovely blue Aster-like flowers; Dracocephalum canariense; the Balm of Gilead (Cedronella cana), having very fragrant foliage and purplish-red flowers. Lythrum alatum is a charming pot plant, having erect, slender stems covered with purplish-red flowers; the latter I have known to stand an ordinary winter: this used to be grown as a market plant. Phloxes, Antirrhinums, Pyrethrums, and Violas, are a blaze of colour; to enumerate the best would be impossible, but I would strongly recommend any one to visit some of the establishments where these are grown and make their own selection. I believe the Pyrethrums are better than they were in May: they are now flowering a second time. Nymphæa alba, N. odorata, N. tuberosa, Nuphar lutea, N. advena, and N. pumila (the yellow and white Water Lilies), are also in flower. One of the most elegant aquatics is the Flowering Rush (Butomus umbellatus); I saw a ditch full of it the other day; it ought to be planted in every ditch and swamp in the land. Alisma Plantago and A. lanceolata were also growing near and in full flower. On the different pieces of rockwork near London are to be found the hardy Opuntia Rafinesquiana, with large citron-coloured flowers; it grows freely when planted among stones. Onosma echioides, with white tubular flowers, is very distinct; both this and the golden-yellow O. taurica are well worth growing. Silene Schaftæ is covered with bright red flowers and will last for some time; the innumerable spikes of blue flowers of some of the dwarf Statices are very attractive; there are a number in flower both of the tall and dwarf varieties. Among the border ones S. latifolia, S. Limonium, and S. Smithi stand conspicuous. Epilobium obcordatum (the Rocky Mountain Willow Weed) is improving in appearance; it is now covered with rosy-purple flowers. Myosotis azorica, a Forget-me-Not, with intense blue flowers, is very good. Lychnis Lagascæ, L. Presti-multiflora, Veronica austriaca, Sedum pulchellum, Saxifraga autumnalis with yellow flowers, Sempervivums of sorts, and many others which were enumerated last week tend to make the rockwork very gay. Among bulbous plants Lilies stand first; early-flowering plants of auratum are now in their glory; these, as a rule, have the finest flowers. I saw the variety called L. virginale last week; what a gem it is! not a spot, just a faint yellow band running through each petal. It was the only auratum that had opened; it had fine flowers. L. superbum is now at its best; it does not vary in colour so much as its neighbour L. canadense. The varieties of L. longiflorum are still good, and so are L. Krameri, tigrinum, chalcedonicum, and Humboldti. The Mexican Tiger-flowers are as gorgeous as crimson and gold can make them; they will produce fresh flowers daily for the next two months. In Zephyranthes candida (the Flower of the West Wind), charming white flowers surmount tufts of dark green grassy foliage. Anomatheca cruenta is very charming; its brilliant crimson flowers, on stalks 6 in. high, show well when grown in pots: this plant will also remain for years bright and attractive on the rockwork. I do not say that the same bulbs flower year after year, but the seedlings will; it seeds freely, and the seedlings flower the first season. Many of the Gladioli are at their best—varieties of G. gandavensis, G. Brenchleyensis,

Cobweb House-leek (Sempervivum arachnoideum).

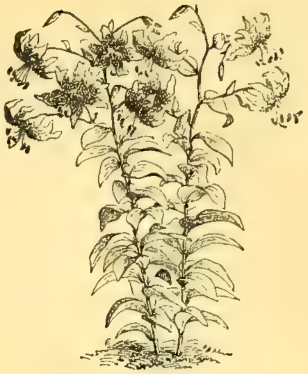
Rhodanthe Manglesi maculata.



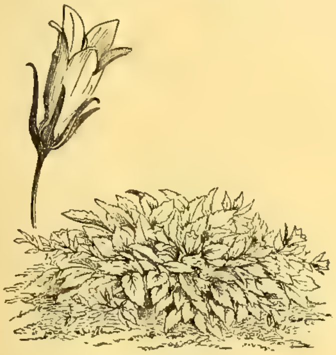
Sky-blue Didiscus (D. cœruleus).



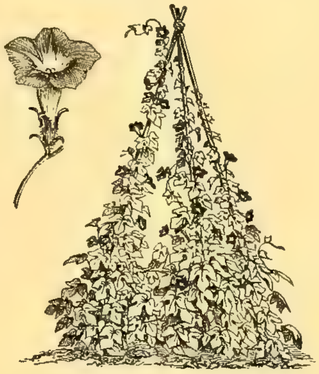
Ipomæa (Pharbitis) purpurea.



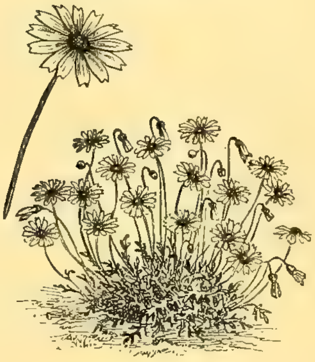
Lilium speciosum.



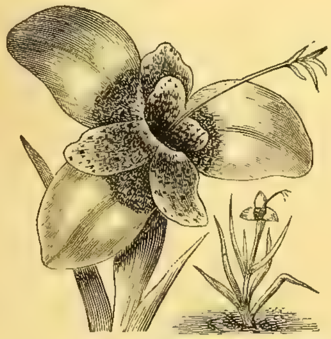
Symphyandra pendula.



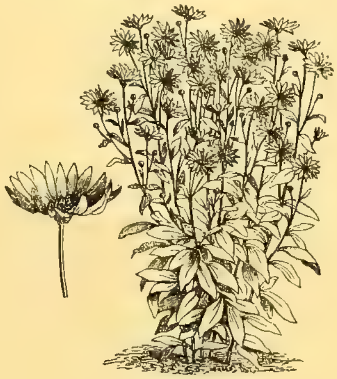
Ivy-like Ipomæa (I. hederacea).



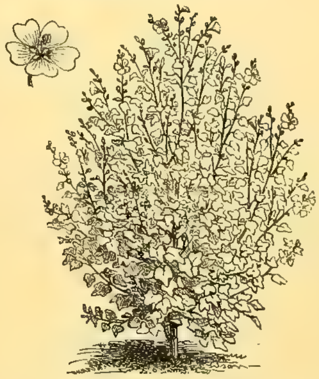
Sphenogyne speciosa var.



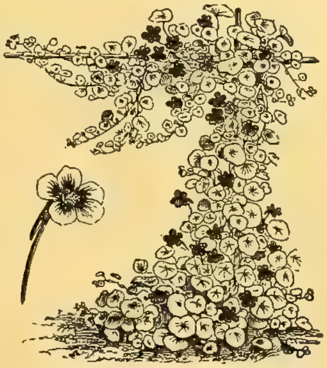
Mexican Tiger-flower (Tigridia Pavonia).



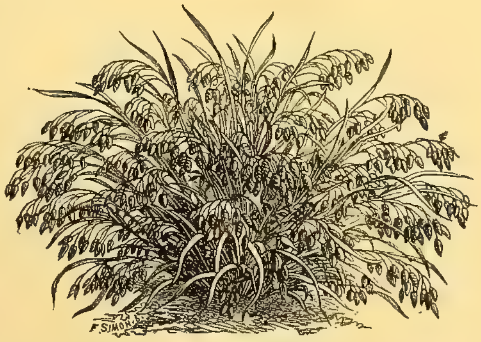
Harpalium rigidum.



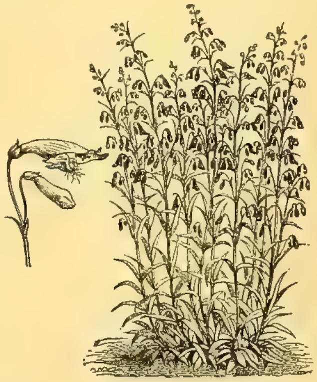
Downy-leaved Mallow (Lavatera Olbia).



Tropæolum Lobbianum hybridum.



Bromus brizæformis.



Chelone barbata.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

G. natalensis; G. psittacinus is also in bloom—its curious green and scarlet flowers have a peculiar charm; it is a strong, vigorous species, and well worth cultivating. Antholizas and Watsonias are also in flower: some of the colours are very singular. I fancy they want a peculiar situation, as I have never seen them in first-class condition away from the Channel Islands—there they grow like weeds. There are two remarkable Orchidaceous plants in flower at Tottenham, which I have never seen before in such fine condition, planted in the open air, in a shady, moist bed, viz., Satyrium aureum and S. carneum, both from the Cape; the flower-spikes of both are 18 in. in height, having large fleshy foliage, and numerous showy flowers—the former golden yellow, the latter varying from flesh to a bright lively rose. P.

THE LIBRARY.

HORTICULTURE.*

This is one of the series of books on "British Industries," edited by Mr. Bevan, and published by Mr. Stanford—a series which has had a merited success, and which has been well done in matter, as in type, paper, &c. Mr. Burbidge, in dealing with horticulture from this point of view, has dealt with the following subjects as one acquainted with them would do:—Commercial gardening, fruit culture, vegetable culture, culinary vegetables, salad vegetables, herbs, decorative plant culture, Covent Garden market, fruit and vegetable preserving, plant propagation, hybridizing and cross-breeding, public gardens, gardening industry abroad, and collateral industries of gardening. Gardening, he remarks, as a profitable industry has made enormous strides during the last twenty or thirty years, and at the present time it absorbs an immense amount of capital and skilled labour in, or near, all our large towns, where we now find men of means investing money in choice Orchids, Ferns, and other exotic decorative plants, as well as in tasteful dwellings, fine pictures, or other works of art. Commercial gardening may be summarised as follows:—1. Importation and culture of new and rare exotic plants, shrubs, and trees. 2. Hybridization, or artificial origination of new plants, fruits, and vegetables. 3. Culture of decorative plants and cut flowers. 4. Fruit, vegetable, and seed culture for market. And to these general departments may be added the enormous trade in other horticultural products and appliances, to which I shall more fully allude elsewhere. So long as we enjoy peace and commercial prosperity, the introduction and sale of beautiful decorative plants will continue as profitable, or even more so, than the production of necessities in the way of fruit and vegetables, and so long shall we find our Veitchs, Lows, Bulls, Van Houttes, and Vilmorins ready to employ an enormous amount of capital in sending abroad collectors, and in increasing, improving, and disseminating their discoveries at home. A visit to any large nursery, say that of Messrs. Veitch & Sons, in the King's Road, Chelsea, for example, will be amply sufficient to show that the trade industry of gardening is a most important one. In many of our leading metropolitan nurseries, the capital employed varies from £10,000 to £50,000, or even more, and these large sums are invested in plants and seeds, together with appliances for their cultivation and distribution. One of the most profitable branches of the nurseryman's business of late years has been the collection and importation of the Indian and South American Orchids, Lily bulbs from America and Japan, and seeds of various kinds, notably those of the American Coniferæ, all of which have found as ready and remunerative a sale at Stevens' Auction Rooms, near Covent Garden Market, as have the Apples, Oranges, Bananas, Pineapples, and other food products sold weekly in such enormous quantities at Keeling & Hunt's and Grant & Gask's, in Monument Yard and its neighbourhood. In many cases the improvement of foreign introductions by means of hybridism, or cross breeding, has been adopted by trade cultivators with advantage, notably the Indian and American Rhododendrons, Calceolarias, Pelargoniums, Camellias, and other popular flowers; and even now, notwithstanding the increased intelligence of professional gardeners and amateurs, nursery growers still rely on their superior skill and appliances in the way of plant propagation and cross breeding, to render their home trade profitable. Many thousands of acres of land in this country, and also in France, Belgium, Holland, and Germany, are devoted to the production of flower and other seeds of various kinds for our gardens, and here, as a rule, the nurseryman or seedsman is the middleman who buys seeds in bulk from the grower or his agent, after which he packs and prepares them for distribution to his customers. The adulteration of garden and other seeds has of late years been made a subject for legislation, but still the practice largely prevails; sometimes it is the grower who is at fault, but more generally adulteration takes place after the goods leave his hands. A common plan of adulteration is to kill inferior seed by baking or other processes, after which it is sold as "ooo" for mixing with good seeds. Some English growers harvest vegetable and the more hardy sorts of flower seeds on their own farms, the more tender kinds being purchased in quantity from Continental growers. The culture of fruit trees is not now so remunerative as I hope it will be when the demand becomes greater, which it assuredly will as soon as residents in districts in which good land is cheap fully recognise the importance of fruit growing as a food-producing industry. This would long ago have been the case, had the elements of gardening been taught in our schools as it is in those of Continental countries. A national garden, established on sound principles, in which to test all kinds of fruits, vegetables, and flowers, would not only be the means of preventing the sale of adulterated seeds, or old sorts at high prices under new names, but would form an excellent school of horticulture, and would give an immense impetus to gardening as now practised in this country.

In Kent, Surrey, Middlesex, and Hertfordshire, hundreds of acres are devoted to the culture of fruit trees, Roses, Rhododendrons, and ornamental trees and shrubs of all kinds for garden ornaments, and immense quantities of fruit come to our London markets from what are called the home counties, but principally from Kent, Herts, and Middlesex, where most landed proprietors prefer letting their land for gardening purposes, knowing, as they do, that it will be well cultivated, and that it will yield them at least 50 per cent. more rent than if let for farm culture. The influence of trade gardening on the labour market is, on the whole, a beneficial one. In all the great fruit and vegetable growing districts there is a periodical, and in many cases, a constant demand for the assistance of women and boys in fruit picking, flower gathering and bunching, or otherwise preparing vegetables for market. All our great nursery establishments are in some measure schools for the hundreds of young gardeners employed in them, and from which they are sent to private gardens throughout the country or to the Colonies, as openings occur in the Tea, Coffee, Vanilla, or Cinchona plantations, established either by Government or private speculators.

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* By F. W. Burbidge. London: Edward Stanford, 55, Charing Cross.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Rust on Grapes.—I have many a time had Grapes badly rubbed in thinning by beginners, but I have never known the rubbing to produce rust; it merely spoiled the appearance of the Grapes by depriving them of their bloom. —James Smith, *Waterdale.*

Manure-water in Vineries.—Manure-water in the evaporating troughs is used by many, but a great many more do not use any, and still obtain quite as good results. Liquid made from pig manure would be disagreeable enough put on the inside border, but it would be much worse if used continually in the evaporating pans.—James Smith, *Waterdale.*

The French Vineyards.—The wine growers in France are always complaining of Phylloxera, or Oïdium, or bad crops—any excuse to keep up the price of wine; but they will be much embarrassed to find any cause for grumbling this year, as the yield will, it is said, be the most productive that has been registered during the present century.

Eastnor Castle Melon.—Having just cut a fine crop of this variety, I can recommend it highly as an abundant bearer, excellent in flavour, and a handsome fruit for dessert. When growing, it had a striking resemblance to Gilbert's Victory of Bath, inasmuch as it has a long foot-stalk and rather long fruits of a deep green colour, but as they approach maturity they become beautifully netted, and when ripe assume a golden tint. This has hitherto been rather an unfavourable season for Melons, as the small amount of sunshine which we have had has been all against high flavour.—J. Groom, *Henham.*

EXTRACTS FROM THE KEW REPORT.

The number of visitors to the Royal Gardens exhibits a considerable falling off as compared with last year, being just below 600,000 (596,865). This is the smallest number since 1872. On the 7th of August the Royal Gardens were visited by 64,163 persons, the largest number which has ever been recorded for any one day. During the past year the assemblage on Kew Green on all holidays of large crowds of persons, who do not appear to visit the gardens, has become a difficulty of considerable magnitude. Men with articles of different kinds for sale, music, games, &c., have been, of course, attracted by the concourse, and the whole green has had, on these occasions, the aspect of a fair. Two facts lead me to bring the rapid development of this state of things under the notice of the Board. The Green is scheduled under the Parks Regulation Act of 1872, and as regards general control has been placed under my authority. In the next place, and this is perhaps the most serious consideration, the excitement which naturally arises in large crowds of persons bent upon amusement, and with nothing else to engage their attention, has shown a tendency to spread amongst those who visit the Gardens, where it can only lead to grave difficulty and annoyance to quietly-disposed visitors. With the assistance of additional police, possessed of the necessary tact and experience, matters were very materially ameliorated during last summer, and I am in hopes that the evil, when once checked, will not require further attention. In my report for last year (p. 5) I drew the attention of the First Commissioner to the rapidly progressing decay of the beautiful Eyot in the Thames immediately above Kew Bridge, and upon which the beauty of this part of the Thames depends. Owing to the gradual encroachment of new suburbs upon the ground in this neighbourhood, till lately used for market gardens, very large tracts of Osier beds, over which the high tides formerly spread themselves unimpeded, have been embanked. The tidal water is now apparently driven farther up the river, and the consequent inundation of low-lying places has become an evil which formerly was but little felt. One result must be the complete destruction of the Eyot above alluded to, which is known locally under the name of Mattingshawe. Not merely is the soil, which is often entirely covered at high tide, being gradually washed away, but the trees, many of which no doubt have reached their prime, are being one by one undermined and uprooted. The present process of destruction without some active intervention is inevitable. I feel sure that when complete, and the view of the town of Brentford, with the gasworks and goods station of the Great Western Railway replaces one of the most beautiful compositions of wood and water to be found on the lower Thames, the regret felt by the public at the loss will be very great. In the latter part of 1875 complaints were made as to the quality of the water supplied to the drinking fountains and residences. At the request of the Board, Major F. Bolton, water examiner to the Local Government Board, made a visit of inspection to the Gardens. The following is the substance of his report:—The intake of the water is from the River Thames at a point situate in Kew Gardens, immediately opposite Syon House. From the river the water flows into the lake (which is used as a subsiding reservoir) of about 5 acres area, whence it is passed through a small filter-bed. It is then pumped up into reservoirs in Richmond Park, and from here supplies the gardens and official residences at Kew, as well as drinking fountains in the Gardens. Pembroke Lodge and the White Lodge are also supplied with water from these reservoirs. The intake of water opposite Syon House for any except garden purposes is probably illegal, inasmuch as the Metropolis Water Act, 1852, prohibits any corporation taking water for domestic use below Teddington Lock. The water (at the time of examination) was very foul and strongly charged with sewage matter, from which the present filter-beds had proved quite inadequate to free it, and from which, indeed, no system of filtration would suffice to purify water so charged. In accordance with this report the Treasury sanctioned (Jan. 8, 1876) the expenditure of £960 for laying mains from the Southwark and Vauxhall Company's service to the residences, drinking fountains, and museums in the Royal Gardens, and an annual sum of £250 in payment of the Company's charges for the supply. The lessons given to the young gardeners in the evening, in chemistry, meteorology, structural, systematic, and economic botany, and upon which the attendance is voluntary, continue to give satisfactory results.

Botanic Gardens.

The further re-arrangement of the plants in the Palm House was proceeded with in the course of last spring, and may now be regarded as practically completed. A great improvement has been obtained in the general effect. As mentioned in my report of last year, it has been found necessary to cut down nearly all the large Palms on the north side of the transept, and plant out others in their places. The following are the more important changes:—Arenga saccharifera cut down and replaced by Sabal glaucescens. Livistona inermis (L. australis) Bot. Mag., 6274, cut down and replaced by Phœnix dactylifera. Sabal glaucescens transplanted and replaced by Astrocaryum rostratum. Acrocomia sclerocarpa cut down and replaced by Thrinax aculeata. Sabal umbraculifera cut down and replaced by Livistona chinensis. Veitchia Canterburyana transplanted and replaced by Ceroxylon andicola. Phytelephas macrocarpa removed and replaced by Attalea Cohune. Areca alba cut down and replaced by Euterpe pisifera. A selection of the larger tropical Ferns, Aroids, Marantaceæ, &c., has been planted in the beds under the Palms, which have hitherto been quite bare. They are now covered with an undergrowth of singular picturesqueness and luxuriance. The gigantic Screw Pines (Pandani), which are such a conspicuous feature in the north wing, are rapidly becoming too large for the positions they occupy, and, as it is impossible to give them more space, they will have to be cut down in the course of one or two years at the farthest. I must again urge the desirability of a reform in the heating apparatus of this house, as detailed in my last year's report, as a measure of economy even more than of efficiency. With the exception of the immense improvement in both heating power and reduced consumption of fuel, obtained by bringing the flues up through the roof of the wings instead of conducting them underground to the shaft near the Richmond Road, no material improvement has been introduced into this building since its construction nearly thirty years ago. The re-arrangement of the staircases leading to the gallery, proposed in my last report, has been reported upon by the Board's works' department, and unfortunately proves to be impracticable. Some means of draining off the moisture due to condensation which accumulates on the gallery floors during the winter is, however, urgently needed.

In the **Aroid House** (No. 1) the superb Tropical Tree Fern (Cyathea princeps), having outgrown suitable dimensions, was with great reluctance on my part, taken down in the course of the summer, and replaced by a smaller specimen from the Tropical Fern house. The whole collection of Aroids has been very carefully revised, and a catalogue prepared by Mr. Brown, second assistant in the Herbarium. It comprises upwards of 300 species, and should eventually be printed for distribution to other botanical establishments. The whole collection of Calami (Rattan canes) is now also arranged in this house, the moist heat of which suits them better than the Palm House.

The **Fern Houses** (Nos. 2 and 3) retain their pre-eminence, whether for the number of species in cultivation or the health and vigour of the plants, but the constant humid temperature necessary to their growth so damages the painted woodwork of the houses that they are under frequent repair. I am strongly of opinion, that seeing how much shade Fern-houses require, the side walls should be of bricks up to the eaves, with large side sashes, and that the woodwork of both roof and sashes should be of some of the durable Colonial woods, as the Jarrah of West Australia, which would probably not require internal painting. The species of Cheilanthes in the Cool Fern House, which have proved very impatient of pot culture, have been planted on a broad side shelf covered with stones, potsherds, and soil well drained below, and promise to do well under this treatment. Many of the smaller Ferns in the same house, which, when in small pots, were watered either too much or too little, have been similarly accommodated with obvious success. The number of species and varieties of Ferns in the Royal Gardens is now upwards of 1000.

The labour and expense of keeping up both the interest and beauty of the **Ornamental Conservatory** (No. 4) throughout the year, by a mixture of commoner with the rarer ornamental plants, is a subject to which I have, especially of late, devoted a considerable amount of attention. It has occurred to me, that as regards the common plants of merely decorative interest, of which it is desired to display a fair quantity as affording a very great gratification to many visitors, it might be more economical and satisfactory to buy than to raise them ourselves. Within recent years the cultivation of certain kinds has become a speciality with suburban nurserymen, who raise and supply the London trade with them by tens of thousands, and at a comparatively trifling cost per pot. The number of each kind required for this house at any one time is comparatively small, and the material labour, skill, space, and attention, &c., that these few require would almost suffice to raise double the quantity or more. Under these circumstances, I believe it might be to our advantage to devote our attention to the cultivation of the rarer sorts alone and to purchase the commoner.

The **Succulent House** (No. 5), which is by far the most interesting in the garden in respect of the magnificent collection of plants of grotesque habit and singular form, has also been re-arranged, and some of the large duplicate Euphorbias, Aloes, and Cacti removed to the Palm House. Several of the largest Agaves and Fourcroyas (commonly called American Aloes) have flowered during the past summer, and the flowering stems rising to a considerable height were allowed to pass through the roof, presenting a striking and singular appearance.

The collection of **Economic Plants** has been carefully revised, extended, and entirely re-arranged. It is now probably one of the most complete series of medicinal and useful plants ever brought together. The nomenclature has been checked, and a manuscript catalogue prepared. I may take this opportunity of noting that a well-known stove foliage plant of gardens, Theophrasta imperialis, Linden proves from the examination of specimens in fruit sent to us by M. Glaziou, to be a species of Chrysophyllum belonging to a different natural family, Sapotaceæ.

Balsam of Copaiba.—Some well-ripened seeds of the Para Copaiba (Copaifera multijuga) have been brought by Mr. Cross from the forests of Para and germinated freely. The tree which produces it is described as gigantic, the trunk sometimes rising to a height of 80 ft. before branching. The Para Balsam, called Copaiba blanca, is chiefly sent to France, where it obtains the highest price of any. A single tree, if tapped at the right season, is said to yield about 84 imperial pints of balsam. Very little is known of the history or botanical characters of this plant, which has been only imperfectly described. It is greatly to be desired that this tree should be introduced into the East Indies.

Balsam of Peru.—This beautiful tree (Myroxylon Pereiræ) was introduced into Ceylon in 1861 by the exertions of the late eminent pharmaceutist, Daniel Hanbury. It has succeeded there admirably, and last year I received several parcels of seeds from Dr. Thwaites, which I have distributed to various tropical colonies. Dr. Thwaites speaks in warm terms of the beauty of its foliage and habit.

India-rubber.—On the 14th of June of last year Mr. H. A. Wickham, a resident on the Amazons, who had been commissioned by the India Office to collect seeds of the Hevea brasiliensis, arrived in England with 70,000, obtained on the Rio Tapajos. In consequence of their retaining vitality for but a very short period, they were all sown the day after arrival, and, though not contained in pans, covered a space of over 300 square ft. closely packed together. About 3¾ per cent. germinated, some as early as the fourth day after sowing, and many in a few days reached a height of 18 in. Upwards of 1900 plants were transmitted, August 12, in thirty-eight Wardian cases made specially to accommodate the rapid growth of the seedlings, to Ceylon under the charge of a gardener. Of the whole consignment, 90 per cent. of the plants reached Dr. Thwaites in excellent condition, and they will remain in Ceylon for the present under an arrangement which I suggested between the Indian and Colonial offices, that the young plants which could not thrive in the climate of Calcutta or any of the more accessible gardens of continental India, should be nursed and established in Ceylon for subsequent transmission through the Indian gardens to Assam, Burma, and other hot damp provinces of India proper. I am happy to say that the plants are thriving under the management of Dr. Thwaites, who has obtained the authority of his Government to establish a supplementary tropical garden at a lower elevation than Peradeniya (1700 ft.) for the more rapid multiplication of the Hevea, Castilloa, Chocolate, and other plants that require a maximum of heat and moisture. On November 21, Mr. Robert Cross, who, in addition to the commission given to Mr. Wickham, had been sent to S. America to bring home live plants in the event of its proving impossible to transmit alive to this country the very perishable seeds, reached Kew with about 1000 living young Hevea plants. The most promising of these have been retained at Kew during the winter, and a portion will be sent to India as soon as the weather permits. The stock of Castilloa elastica, brought last year to Kew by Mr. Cross, has been propagated as rapidly as possible, and plants have already been distributed to Africa (West Coast), Ceylon, and Java. Dr. Thwaites reports that of 31 plants transmitted to him 28 have arrived in perfect health and have thriven vigorously. A plant to which I alluded in my last report, and which is to be found in some Continental and English gardens under the name of Castilloa elastica, proves under cultivation at Kew (although possibly a species of Castilloa) to be certainly distinct from that plant both in the form of the leaves and in habit. Along with the Heveas Mr. Cross brought seeds and plants of an undescribed rubber-tree, which furnishes the "Ceará scrap" of the English market. The export of this has been reckoned at 1100 tons annually. The botanical nature of the plant is at present uncertain, but it may possibly prove identical with Manihot Glaziovii already mentioned. It is at any rate perfectly different from Hevea and Castilloa in character, habit, and habitat. It grows in a climate with a marked dry season, amongst a scrubby vegetation, and has stout short branches and deciduous leaves. Forty-one of the imported stems have grown, and as many young plants have been obtained from these by cuttings. The seeds were raised with difficulty during the winter, owing to the seedling damping off soon after germination, a characteristic of plants of similar habit from similar climates; 14 plants, however, are growing from this source.

Ipecacuanha.—Dr. King reports that he fears this drug cannot be grown profitably so far north in India as Bengal; but the secret of its successful propagation being now perfectly understood, any quantity of seeds can be sent out. A quantity of the dried root has been prepared by Dr. King for use in the Medical College Hospital of Calcutta, and found to be quite as efficient as the best South American drug. The disadvantage attributable to the extreme slowness of the growth of this plant, and hence small annual return of root wherever it has been cultivated, must be met by a greater extension of the cultivation, as to which there should be no difficulty, seeing that the plant is increased with astonishing facility by ordinary cuttings, root division, or by merely pegging a leaf to the earth.

Liberian Coffee.—The demands for this plant (first grown in this country at Kew in 1872), which has excited the expectations of Coffee planters in all parts of the world to the highest degree, far exceed our means of supply. Now, however, that the function of this establishment in introducing the plant into the Coffee-growing districts of India and our Colonies is amply fulfilled, and both the seed and plants are to be had from Mr. Bull, of Chelsea, and Messrs. James Irvine & Co., of Liverpool, as well as other firms, no further supply will be kept in Kew than suffices for exchange of specimens with other Botanic Gardens and correspondents. Mr. Hiern has examined the African species of the genus Coffea in preparing the Rubiaceæ for the forthcoming third volume of the "Flora of Tropical Africa." He has determined the claims of the Liberian Coffee to be regarded as a distinct species, as was indeed the opinion of its scientific discoverer, Afzelius, and he has described it in the "Transactions of the Linnean Society" [second series, Botany, I., p. 171, tab. xxiv.] under the name of Coffea Liberica. I am indebted to Mr. Hiern for the opportunity of distributing with this report copies of the plate of the plant which he has published in his memoir. I may enumerate as the most important recipients during the past year:—*Bombay, *Burma, *Cape of Good Hope, Dominica, Java, Madras, Montserrat, *New Granada, Queensland, Rio de Janeiro, *Trinidad. The places marked with an asterisk had not received it the previous year. Amongst the numerous favourable notices of the plant which I have received I will content myself with quoting two from opposite sides of the world. Dr. Thwaites (Ceylon) writes under date 29th August 1876:—"Some of the first plants of Liberian Coffee you sent to me have become large bushes and are producing berries. These latter are of a large size, but they ripen very slowly, evidently from the want of a higher temperature, so I am distributing some plants in the low country and near the sea. In his report for 1875, he also expresses the opinion that though the plants have become affected with the leaf disease, they do not apparently suffer here [Peradeniya] from Hemileia so severely as our ordinary Coffee." In the Malabar district of South India, the Liberian Coffee has also disappointed the expectations which its large and leathery foliage seemed to encourage of its capacity for resisting the Hemileia. Its more vigorous habit of growth may, however, enable it to bear, without succumbing, the ravages of this insidious parasitic mould. Dr. Imray (Dominica) writes while this report is in preparation:—"I am thoroughly convinced that the Liberian Coffee will in time take the place of our native Coffee, if I may so call it. I think you would be pleased were you to see my Liberian trees with their healthy vigorous branches and large dark green bright shining leaves. Many of the trees have blossomed, and are still flowering, and a small crop of berries is coming on. The plant must evidently be very prolific. I count as many as fifteen or twenty berries, even more, in the axils of the two opposite leaves. . . . . It appears to me that the new species of Coffee is peculiarly adapted to this island. So far as the temperature and rainfall are concerned, the climate approximates very closely to that of Liberia, whence the plant comes. If the cultivation of Liberian Coffee be generally taken up in Dominica, as I think it will be, there is a future for this little country. There are thousands of acres of splendid Coffee land that might be cultivated in this island with no fear of the 'white fly' before the eyes of the planter, for the Liberian tree bids defiance to its attacks. Indeed there is a very eligible field for settlers here, with a little money in their pockets, who wish to cultivate Coffee. It might be pleasanter, and more profitable in the long run, to set their faces towards the west, instead of the 'far east.'" The suppression of this product generally in Dominica, which island once yielded the finest West India Beans, has been the subject of correspondence with the Colonial Office. This led to the mission of Mr. Prestoe, the Government botanist of Trinidad, to Dominica, with a view of reporting on the subject. Mr. Prestoe's report, which is in every way an admirable one, deals with all the vegetable products of the island in an exhaustive and most instructive manner; and in respect of Coffee, it shows that the cessation of its cultivation was not due to the larva of a small moth (Cemiostoma coffeellum), which can be extirpated from a plantation with great ease, but to causes which are far more general, affecting the well-being of the whole island, and especially to mismanagement on the part both of the Government and the colonists.

Eucalyptus in India.—Hopes still appear to be cherished that the Blue Gum of Tasmania (E. globulus) will succeed in the plains of India, and in other tropical countries. This expectation has hitherto, as might have been expected, in every case led to disappointment. A paper by Dr. Brandis on the "Cultivation of the Different Species of Eucalyptus in Northern India" issued by the Indian Government, will no doubt be held conclusive as far as that country is concerned. Dr. Brandis remarks:—"It seems to be acknowledged that in the open country in the plains of North India stations are improved and become more healthy by the planting of trees. If this be admitted, then obviously the object desired is gained in the shortest time by planting those species which grow most rapidly." Eucalypti are probably not better adapted for this purpose than other quick-growing trees, but have the merit of producing very hard timber. Two species which have succeeded well at Lucknow, have been sent to Kew for identification. They appeared to be Eucalyptus rostrata, (Schlect.), and E resinifera, (Sm.). Other species from the hotter parts of Australia would probably be equally available.

Gutta-percha.—Literally nothing is known as to the botanical history of the commercial varieties of gutta-percha. Several kinds of different qualities and even exhibiting different properties are imported into England, and are in immense request, especially in telegraph cable manufactories, but neither the plants which produce them nor the localities in which they are produced are approximately known. I attach great importance to the prompt investigation of gutta-percha-yielding plants. There is reason to believe that they are very local and restricted in their geographical occurrence. The collection of products of this kind for commercial purposes is shown by experience to lead inevitably to the destruction of the trees producing them, since these are recklessly destroyed and never replaced. It is not merely, therefore, a matter of scientific interest to ascertain the exact nature of gutta-percha-yielding trees, but it is the first step in securing the perpetuation of the supply. The botanical investigation of a product or plant simply means getting such complete knowledge about it as to leave no difficulty in the way of recognising it at any time without uncertainty.

Melons from Turkestan.—Dr. King forwarded to the Royal Gardens a collection of seeds of the best kinds of Melons grown at Kashgar. These were distributed partly to M. Naudin, the well-known monographer of the Cucurbitaceæ at Collioure, in the South of France, partly to the Royal Horticultural Society at Chiswick. Seeds from kinds which proved the best have been again distributed to several of the best Melon growers in England. They are at any rate likely to give rise to new strains, even if not of themselves of sufficient value for actual horticultural use.

Poisonous Grass in Kashmir.—Dr. Aitchison has sent specimens of a Grass poisonous to cattle in Kashmir. It proves to be Stipa sibirica, and it is possible that its injurious effects are due rather to the mechanical irritation produced by fragments of the awns than from any noxious principle contained in it. A closely-allied species of Stipa has been described by Dr. Hance ("Journal of Botany," 1876, pp. 210—212) as producing somewhat similar effects in Thibet.

Large Sugar-canes.—Inquiries have been addressed to me respecting an enormous and apparently little known variety of the Sugar-cane, called the Elephant Cane of Cochin China, which has been stated to reach a height of 11 ft. and a diameter of 7 in. in six months. At my suggestion the Superintendent of the Botanic Garden at Singapore has obtained from Cochin China plants of this cane, which he has succeeded in establishing. I am also indebted to M. Pierre, Director of the Botanic Garden at Saigon, for the following information, which I think may prove interesting to sugar growers in British colonies:—"This variety is only cultivated for eating or chewing. I do not think it would prove a good sugar-producing cane . . . . . . but varieties, especially in the case of sugar-canes, often improve by change of climate. Perhaps this might have the good fortune to succeed better elsewhere. The dimensions as to diameter and height which this variety attains, depend on the length of time during which its growth continues. It requires in a good soil two years to reach 10 ft. in height. After five years or six years, it may reach 16 ft. to 32 ft.; such specimens may be seen near native houses, where it is allowed to grow undisturbed as an ornamental plant. In the province of Mytho this variety is cultivated in humid, alluvial soils on a considerable scale, but simply for sale in the bazaars and for chewing. It has the peculiarity of possessing a very brittle, epidermal layer, so that instead of becoming pressed out and giving up its juice when passed through the wooden mills employed here, it breaks up into small fragments."

Museums.—In my last report I adverted to the necessity of giving increased accommodation in Museum No. 2, in order to allow of a proper display of specimens illustrating the Cryptogamic groups of plants. These are at present most meagrely illustrated from want of space. They are, however, objects of increasing interest to the large numbers of persons who make the study of some branch of natural history their recreation, and with whom our museums are extremely popular. The whole of the museums are in a most crowded condition. No. 1 has long been waiting for the relief which throwing out the staircase at the back would give to it. No. 3 contains quite as many objects as there is room to properly display, having a regard to the necessity of preserving proper thoroughfares on crowded days. In order to provide accommodation for new objects, and also to more strictly define the scope of the collections, the curator, with the aid of the assistant-director, has commenced a systematic revision of the whole collections. For the future only one series will be maintained, and every specimen, whether structural or economic, will, as far as possible, be ranged in its systematic position. No separate collections of merely technological interest will be kept, and those already existing have been now broken up and distributed. A large number of duplicates and of other objects which on various grounds did not seem to be properly congruous with the object of the museums as illustrating structure and usefulness throughout the vegetable kingdom, have been as far as possible placed at the disposal of other Government institutions. Dr. Hugo Müller has published, in German, an exhaustive and most valuable treatise on paper materials amongst the reports of the Vienna Exhibition. Dr. Müller largely availed himself of the resources of the Kew museums during its preparation. It will no doubt remain the standard authority on the subject, and I trust that a translation may be published for English use. H.R.H. the Prince of Wales most graciously placed at our disposal the large collections of fruits, seeds, woods, &c. collected during his Indian tour. These specimens were materially enhanced in value for the purposes of our museums by H.R.H.'s expressly stipulating that we should be entirely free from any conditions in introducing the specimens into our arranged collection.

Physiological Laboratory.—The physiological laboratory, which the Royal Gardens owe to the munificence of T. J. Phillips Jodrell, Esq., M.A., and the commencement of which I reported last year, has been completed, and though as yet only partially provided with the necessary equipment, has been already used by Dr. Tyndall in researches on the conditions by means of which the minute organisms (Bacteria), the germs of which are always present in the air, and which determine putrefactive changes in infusions of organic substances, can be effectually excluded from them ("Proceedings of the Royal Society," Jan. 18, 1877). I have the satisfaction of stating that the internal arrangements of the building, which were intrusted to the assistant-director, have been pronounced by both English and continental authorities to be (considering the size) more convenient than those of any other establishment of the kind known to them.

Two other physiological researches have been carried on at Kew during the past year, although the laboratory was not sufficiently advanced to be available for them. Professor Burdon-Sanderson has continued his examination of the electrical phenomena of the leaf of Venus's Fly-trap, Dionæa muscipula ("Proceedings of the Royal Society," Dec. 14, 1876), and Mr. S. H. Vines, Fellow of Christ's College, Cambridge, has studied the digestive ferment of Nepenthes ("Journal of the Linnean Society," vol. xv., pp. 427—431).

I may also mention here that leaves of Chamærops humilis have been supplied to Dr. Hugo Müller, F.R.S., for the purpose of an investigation which has led to the detection in them of a peculiar sugar, Quercite, the occurrence of which in Palms was altogether unknown.

Herbarium.—The new building for the accommodation of the Herbarium is in a very advanced state. It will consist of a hall attached to the back of the present house. The whole of the latter will be preserved, except the drawing room, a single apartment that was added on to its north side, and which has been removed to make room for the new hall, which is 86 ft. long by 40 ft. broad, and contains two galleries 10 ft. broad running round it. The galleries will communicate with each other and with the ground floor by two circular iron staircases placed one at each end of the building. On each floor there will be an entrance from the old building, closed by double iron fire-proof doors. The long sides of the building will be lighted with forty-eight windows, eight on each floor on each side. The cabinets for holding the specimens will be arranged in blocks 8 ft. high, of two tiers projecting like buttresses between the windows on the ground floors and galleries, thus accommodating the greatest number of cabinets with the least loss of space, a very important consideration considering the extent of the collection and the time that would be otherwise lost in consulting it. At the present time the number of cabinets is upwards of 600, and the estimated number of specimens contained in the whole is now considerably over a million, reckoning as one all the individuals of the same plant from the same locality.

The whole building will be heated with hot-water pipes. Water-mains charged at high pressure, sufficient to throw a jet more than the height of the whole building, will be carried to each floor. When complete the old building will be cleared out, as much as possible of its combustible fittings and woodwork removed, and the rooms arranged for the better accommodation of the library and of persons, besides the staff, engaged in the study of the collections.

THE SOIL IN TOWN GARDENS.

In reference to this subject, allow me to say that lime is a necessary constituent of all productive soils. In its absence the organic matter, consisting of the remains of leaves and roots of plants, &c., accumulates to an injurious extent, and as a consequence thereof soluble silicic acid is formed in the soil—one cause of what is technically known as sourness. But when to such a soil lime is applied it combines with the soluble silicic acid, rendering it insoluble, and aids in the decomposition of the excess of organic matter by neutralizing the acids formed by oxidation. It will, therefore, be evident that lime plays a very important part in the economy of soils. Now, one of the striking properties of lime is that it has a tendency to work down in a soil, insomuch that if a meadow be turned up some years after it has been limed, a layer of that substance can be found 4 in. or 5 in. from the surface. This being the case, it is apparent that a soil left long to itself without being turned up or disturbed in any way would, in the course of time, become deficient or void of lime. This is the condition of most plots of ground in towns. They frequently remain for years without being touched or turned up in any way, and often have not had anything like an application of lime for generations, except such an accidental application as occurs through strewing the land with mortar during the process of pulling down and rebuilding houses in the neighbourhood. To sum up, my experience teaches me that the soil of plots of ground in the centre of smoky towns is almost always sour, and over and above the effect the absence of lime exerts in producing this result, they are more liable to suffer from this cause from their sheltered position and the decreased oxidising power of the air of towns, and from the fact that frequently no trouble is taken in turning them up so as to get the full benefit of the oxygen that may come in contact with them. Therefore, as the evil for which lime is a corrective is liable to be more prevalent in towns than in the country, it is evident that its application is more necessary. My advice, therefore, to those who undertake the cultivation of London gardens is, at first starting, to give a large dressing of lime, and dig it well in to the depth of 12 in. or 15 in., and during the subsequent cultivation every care should be taken to keep the ground in a loose state by continual digging and turning.

A. A. Nesbit, F.C.S., in "Globe."

Count Moltke on the Treatment of Water.—He describes Peterhof: the palace—white and gold with golden cupola, surrounded with dark Fir trees and a "most peculiar alley of jets of waters," between which the sea and the horizon of the coast of Finland can be seen—making "a most surprising impression," and the park full of cascades, temples, and statues, "recalling Wilhelmshohe and Sans Souci; but—"What pleased and surprised me most in the park was a brook, a real natural stream, with crystal-clear water rushing over blocks of granite. I could not have believed there was so great a fall in flat Russia from the Valdai Hills to the level of the sea. It is always perfectly unaccountable to me how landscape-gardeners in flat countries will contrive waterfalls instead of using their labour to make, at least for a short distance, a splashing, murmuring brook. The artistically victimised water is sent over a plank]into a 6-ft.deep chasm,whence it seems to creep away ashamed, not knowing where to go! To make the thing complete, the cataract should only be set off when the spectator is standing ready to be astonished.

At Norfolk, Virginia, the Strawberry pickers, paid by the quart, have been having about 15,000 dollars a day distributed among them.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

August 7.

This meeting, though sparingly attended, was above the average as regards exhibits. Two very fine specimens of Odontoglossum vexillarium shown by Sir Trevor Lawrence attracted universal attention, as did also a bank of cut Roses from Messrs. Geo. Paul & Sons. A collection of Phloxes in pots, from Messrs. Laing & Co., Forest Hill, was deservedly awarded a cultural commendation, the plants being well grown and the blooms all that could be desired.

First-class Certificates.—These were awarded as follows:—

Pelargonium (echinatum) Spotted Gem (Cannell)—A beautiful Cape variety, bearing neat trusses of small, bright, rose-coloured blossoms, with white centre, and golden-tipped anthers. It looks to be a useful kind for pot culture, and for furnishing cut blooms in winter.

Dendrobium suavissimum (Williams).—Described previously in The Garden.

Dracæna Bausei (Williams).—A compact-habited kind, with broad, drooping leaves of a bright bronze colour, conspicuously margined with bright crimson; well worth attention.

Rose, Marquis of Salisbury (George Paul & Son).—A Hybrid Perpetual, with large, well-formed blossoms resembling those of Alfred Colomb.

Eulophia guineensis (Sir T. Lawrence).—An African Orchid, with Calanthe-like leaves, and flower-stalks from 2½ ft. to 3 ft. in length, the upper portion of which is beset with chocolate-coloured, five-petalled flowers, having rosy-purple-striped lips.

Miscellaneous Subjects.—Mr. B. S. Williams, Holloway, furnished a miscellaneous group of plants, consisting of well-grown examples of Acalypha musaica, Croton fasciatum, Eranthemum El Dorado, Lilium neilgherrense, and a fine-leaved Dieffenbachia called marmorata. A group of hybrid Begonias came from Mr. J. Chambers, Westlake Nursery, Isleworth. Amongst them were kinds remarkable alike for compactness of habit and for the varied and brilliant colours of the flowers. From the same exhibitor also came plants of Adiantum Feei, and several other Ferns. An exceedingly free-flowering new dwarf Candytuft named Tom Thumb came from Messrs. Sander & Co., St. Albans; and a collection of variegated Celosia (C. cristata variegata) came from Messs. Vilmorin & Co., Paris. The plants were robust in habit, and the flowers of various colours, but more singular than beautiful. Mr. R. Dean, Ealing, sent cut blooms of African Marigolds, large in size, and bright in colour; the same exhibitor had also cut blooms of Stock Mauve Beauty, a summer-flowering kind, which should find a place in every garden, even small plants of it producing flowers in abundance, and useful for cutting purposes. Mr. Woodbridge, Syon House, contributed branches of the graceful Spiræa-like]Tamarix gallica, and of Ceanothus americanus roseus. Mr. J. Puttick, Acton, showed some remarkably well-grown Balsams, which were good both in form and colour. Among Messrs. Paul's Roses were better blooms of Reynolds Hole than we have seen anywhere else this season. Messrs. Jackman & Son furnished green and golden-leaved varieties of Biota orientalis and Thujopsis borealis. A collection of Abutilons came from the Society's gardens at Chiswick; also a group of double-flowered Pelargoniums and Stocks. Messrs. Carter & Co., High Holborn, contributed plants of a new Hose-in-Hose Gloxinia, the blooms of which are said to last in good condition for a longer period than those of other kinds. Mr. R. Parker, Tooting, showed cut blooms of Asclepias tuberosa, which received a vote of thanks.

Fruit and Vegetables.—Good examples of Grosse Mignonne Peaches and Welbeck Seedling Nectarines came from Mr. Tillery, gardener to the Duke of Portland at Welbeck; and Barrington Peaches in good condition were furnished by Mr. Pressley, gardener to G. Jennings, Esq., Clapham Common. Mr. Douglas sent good examples of Kerry Pippin Apples; Mr. Gilbert showed from Burghley a seedling Scarlet-fleshed Melon of large size and fair quality. Good fruit of Hale's Early Peach, grown in a cool house, came from Messrs. Rivers & Son, Sawbridgeworth, and were awarded a cultural commendation; as were also a dish of Peaches from Messrs. Lane. Mr. Ollerhead sent a handsome Queen Pine-apple. Good dishes of Cherries were shown by several exhibitors. Mr. Miles, gardener, to Lord Carington, Wycombe Abbey, showed unusually large fruit of Stamfordian Tomatoes; they were cut from plants grown in pots.

Blooms of Lilium candidum for Indoor Decoration.—This Lily is stil one of the best for cutting for large glasses or tall vases where a few bold and striking flowers with plenty of greenery are more effective than if they are crowded amongst Pelargoniums, or any of the more common-place flowers. What a time, too, they last in good condition in water! and if cut before all the blooms are expanded, the stalk will remain fresh till every bud has opened. The great lasting power of Lilies in a cut state forms one of their chief recommendations. October is the best month for planting hardy Lilies; L. candidum should be planted in clumps of several bulbs about 6 in. apart, and they should be covered about 6 in. deep.—E. Hobday.

EXPERIMENTS ON THE FLOW OF THE SAP.

By ANDREW MURRAY.

At the beginning of this session I directed attention to the course of the sap, being of opinion that recent researches rendered some modification in our views necessary on that subject. The proposition that I submitted to the committee was, pure and simple, that there was no such a thing as descent of the sap at all, but that its course was always upwards. I found the committee quite in accord with me, so far as regarded anything like circulation. I think most of them, if not all, repudiated any belief in the old theory of the ascent of the sap by the fibro-vascular bundles of the wood, and its descent by the cellular layers of the inner bark; but I found the majority still imbued by the theories of Sachs, and holding with him, and on his grounds, that descent by some means was absolutely necessary, in respect that assimilation could only take place in the light, and consequently that the whole of that function must be performed in the leaf, whence the assimilated matter there produced must be transported in some way or other to the other parts of the plant in which it is found; and as these are lower down, and some of them even underground, as in the case of tubers, it followed that there must be a descent in some way or other, and the prevailing opinion seemed to be, as was I think first suggested by Mr. Herbert Spencer, that this took place by a slow swaying, or wandering motion, by means of endosmose and exosmose, through the walls of the cells, which imperceptibly and independent of the current of the sap mixed the whole up together, or carried the different ingredients to where they were wanted. Since I last alluded to this subject I have endeavoured to see if actual experiment would throw any light upon it, and as a contribution to its elucidation I now submit to the committee the particulars of one or two experiments that I have made. I made experiments with the Vine, the Fig, the Horse Chestnut, and the Hyacinth, but as they all, so far as they went, tended in the same direction, I will speak principally upon the Vine, which was much more manageable, and took up my infusions more readily than any of the others. Thanks to the experiments of Prof. M'Nab and Prof. Church, I knew of the virtues of lithia as an easily absorbed agent, whose presence could be detected anywhere by the spectroscope in however small a quantity it might be present, and I had the advantage of Prof. Church's own assistance in determining for me whether it was present or not. As lithia, however, is colourless, I added to my infusion enough of litmus to colour them deeply, and I must state as the result of my experience, that the lithia told me nothing that the litmus did not equally well. I then passed gutta-percha funnels over the shoots to be experimented on, and secured them as cups, with the shoots growing up the middle, by means of cork and tallow. My experiments were made in April and May, when the leaves were beginning to open. I put one cup on the stem of the Vine. It held perfectly, and no escape of the liquid took place. After the cup was properly luted to the stem with tallow, I cut a nick in the bark a little above the fitting, and then filled the cup with the lithiated litmus-mixture, so as to cover the nick. I then allowed it to remain on for six weeks, constantly renewing the mixture in the cup as it disappeared. After the expiration of six weeks I took up the plant and examined it: and here let me see that the Committee and I are in accord as what I should have found had Sachs' theory been well founded. I imagine that I should, on the ordinary principles of gravitation, have found the severed vessels below the nick and on the same side filled with the infusion in consequence of its descent. So far as regarded that part of the plant it was no longer a closed tube, and there could be no ascent, but being, as it were, merely an open tube, whatever was poured into it should simply find its way to the bottom. And so in fact it did—the infusion below the nick descended to the very fibrils of the roots. In like manner the part above the nick being a closed tube—closed by the cup at the bottom and by the leaves acting as a sucker at the top—we should expect that the infusion would ascend; and so it did, nearly as completely as it descended below the nick? But how as regards the parts that were on the opposite side of the nick. According to Sachs' theory, whether you call it the result of metastasis or of endosmose and exosmose, the infusion should have been found extravasated and infiltered through that side, both above the nick, and below the nick, and up the ascending branches, and in fact everywhere a little; but in point of fact there was not the slightest extravasation nor a solitary particle of lithia or litmus in any of these places. The depth of the nick was the measure of the extent of the penetration of the infusion, and it was as sharply defined as a line could be; and this is just what I said should be the case. I said that the rapidity of the current would prevent any intermingling of ingredients by endosmose or exosmose, just as a small boat finds a difficulty in getting into the current of a heady river, even with the external aid of oars, or a small stream pouring with the force of gravitation into a more powerful one is shoved aside and driven down the banks. The sap has neither oars nor gravity by which to force its way from one part of the ascending current to another, and it must be content to go with the flow of that part of which it is a component particle. At night there can be no ascending current, for the force that produces it, the sun, is withdrawn, but the tube is full and in equilibrium. To my mind the above is conclusive on the question. Sachs must be wrong; and we must now re-examine his arguments, and see where the flaw lies. If the committee will allow me a few minutes, I do not think we shall have very far to seek. His position is thus stated in his "Physiologie Végétale":—"The absolute necessity (says he) of the intervention of light for assimilation in plants with chlorophyll is proved directly by their mode of development in darkness. When we cause seeds to germinate under such conditions, roots, internodes and leaves are developed generally in proportion to the mass of the seed. When all the provision of elaborated principles contained in it are exhausted for development ceases. If up to that period the seeds be allowed to germinate in the light, and then removed into darkness, the result is the same—the young leaves, although green, assimilate nothing; but if they be allowed to remain long enough in the light to have assimilated a little, there will be developed in darkness leaves and internodes until that new provision be exhausted also." But there is one important fact that Sachs omits to keep in view here. If the plant in darkness assimilate nothing, neither does it take any food to assimilate. It is well known that plants do not feed in the dark, and nothing is easier than to prove it by experiment. Let any one with a Hyacinth growing in water in a glass, mark by a thread or narrow strip of paper glued to the glass the height at which the water stands at night, he will find it at the same height to-morrow morning, but very different to-morrow night. But the fact is not disputed.

Now on what ground are we to hold that the reason why the plant does not assimilate is the absence of light in preference to the absence of food? Either will account for it, and the one will suit Sachs' theory, but the other not. No doubt the food is not taken up during the absence of light, but it may very well be that if the plant were placed in such conditions that it could take food generally, although secluded in darkness, we should find that assimilation went on as well in the dark as in the light; and this, in fact, is just what Nature does with tubers. They are in darkness while the plant is in light, and they contain assimilated matter in as great abundance as any Apple in the blaze of sunshine. Sachs would say that this was derived from the elaborated stores assimilated by the leaf; but this is taking the thing to be proved as part of the proof. He has to prove that assimilation cannot take place except in light. I offer an instance of its apparently taking place in darkness, and the reply is that that cannot be, because assimilation cannot take place in darkness. It is not that the fire will not burn because it is dark, but that it stops burning when the coals are consumed, because no more are supplied to it. During the day the light and heat of the sun draw up the sap to all the terminal parts of the plant, such as the axial extremities of the branches, the buds, the leaves, the tubers (which are only subterranean buds), where it is partly evaporated and partly assimilated—and as it is used up, the roots absorb a corresponding flow to supply the consumption; but at night, when the motive power is withdrawn, the upward flow of sap ceases, the roots become inactive, and cease to feed; at the same time there is nothing to hinder growth growing on—it may pile up cell upon cell, whether the machine is working or not, and it does so, but assimilation ceases. Allow me, however, further to cite a well-known fact in favour of my views, which it reflects no credit upon us not to have sooner so interpreted. Here am I narrating, and you listening to, my clumsy experiments, and yet we have all had always before our eyes—and our ancestors for ages have had them before them too, a constant series of beautiful and conclusive experiments, proving much more clearly than I have done what I have attempted to show. I allude to what we see in the case of grafts. We know that the stock has certain properties differing from those of the scion; we all know that the properties of the stock affect the scion; they are carried up into its system, but those of the scion are not carried down into the stock. If the theory of descent and wandering and mixing of the sap were true, the qualities of the scion ought to descend just as much as those of the stock ascend, but they do not.

I meant to have stopped here, but I am in the position of a man, who, having begun to take a rotten beam out of an old house, finds a whole superstructure of dependencies, offsets, lean-tos, and rookeries tumbling about his ears. The system of vegetable physiology now in credence was built upon the faith of the existence of a circulation of the sap, and everything has by degrees been arranged to fit neatly into it. That rotten beam was removed and its place supplied by Sachs' theory; that, I think, I have shown to be rotten too, and in removing it, without having any other props to put in its place, down must come the hypothesis that the plant derives all its carbon from carbonic acid in the atmosphere, or its nitrogen from free uncombined nitrogen through the leaves, and all power of taking anything into the system through the leaves, and, of course, all hypothesis of feeding, whether vegetarian or carnivorous, through these organs. These theories of circulation by imbibition, diastasis, endosmose, and exosmose, to me are already defunct. Six weeks' unavailing effort to get the slightest indication of any of these phenomena in the living plant seem enough for me. The current is upward steadily, and not only permits nothing to come down against it, but is too powerful to permit anything to deviate from its own place, and force its way into another, even by uniting with it on the way upwards. My position therefore is that for a plant to absorb carbonic acid, whether free or not, through the leaves for the purpose of supplying it with that important element involves a physical impossibility

[We regret that we have not space for the remainder of the arguments which Mr. Murray adduces in support of his views. We must refer for them to the August number of the "Journal of the Royal Horticultural Society," in which his paper will be found at length.—Ed.]

STREET PAVEMENTS.

Since the days of MacNeill, Telford, McAdam, Parnell, and others, volumes have been written upon this subject; yet we have in many localities pavements which are a disgrace to a community making any pretensions to scientific knowledge. This results either from a misunderstanding of all the conditions of the problem or an inability to fulfil them. The conditions, it is true, are intricate and variable, depending upon location, grades, nature of merchandise, vehicles, power, subsoil, finances, &c.; but in this monograph we propose to discuss briefly only the requirements of the surface covering, and to determine in the light of a long and varied experience what material will best fulfil all the conditions of a crowded thoroughfare. The requirements of the surface are that it shall be: (1) firm and elastic; (2) noiseless, clean, and dry; (3) smooth yet rough; (4) permanent, yet easily removed; (5) light yet heavy; (6) it should be durable, producing a minimum amount of wear and tear; (7) it must also be cheap and readily attainable, and (8) non-combustible. The impossibility of selecting any one of the available materials, wood, stone, brick, cement, iron, or asphalte, which will fulfil all the above conditions, is apparent. A compromise must therefore be made, and one or more selected which will approximate most nearly to the requirements of the case.

It is interesting to observe the ingenuity displayed by advocates of a particular material in making it conform to every want, and in theory all the above materials have been found to answer equally well; but from a practical, rational, and disinterested point of view it is impossible that such should be the case; *e.g.*, Vegetable Substances, containing within themselves nitrogenous principles, elements of decay and putrefaction, should be rejected from sanitary considerations alone, but in additions to this, their combustibility, softness of fibre, permeability, and cost are serious obstacles, and the experiences of numerous trials on both continents, under varied conditions, has proved them failures as to durability. We feel entirely justified, therefore, in omitting this material from the list of available substances until some more efficient means be successfully introduced of preserving the block, draining the foundation, and preventing dry rot. Iron has been used in various forms, but, being a manufactured article, it is more expensive than stone or wood, which are natural products. Hexagonal and other forms of blocks, covered with studs, and standing on legs which were driven into the foundation, have been discarded because of the noise, expense, and insufficient foothold. Whenever tried in the form of blocks, iron has been found very objectionable, and its use is now restricted to tram and railroads. Bitumen is a natural mineral product, belonging to the class of hydrocarbons, and may be found either solid, as in asphaltum, or liquid, as in mineral tar. It is used chiefly as a matrix for harder materials. The best asphaltum is imported from Seyssel, in France, and Neufchâtel, Switzerland, but a tolerably good article is also obtained from the island of Trinidad. This substance melts at a comparatively low temperature, and is quite brittle when cold, so that it possesses properties which render it inappropriate for roads when subjected to great ranges of temperature and heavy traffic. When used, however, with sand and cement, it forms an excellent surface, so far as smoothness and durability are concerned. The wooden pavement on Pennsylvania Avenue, Washington, has recently been replaced by another, part of which is composed of Neufchâtel bituminous limestone, $1\frac{3}{4}$ in. thick, laid on a foundation of 8 in. of cement, and the remainder of "Grahamite" (pure asphalt from Ritchie County, Va.), $2\frac{1}{2}$ in. thick on a similar foundation. Brick, being merely clay indurated by burning, is too brittle for ordinary travel; we find ourselves, therefore, restricted to the use of stone or cement as fulfilling most nearly the requirements of a good road covering. But stone occurs in a variety of forms, as in "cobbles," boulders, "spalls," or blocks, and in sizes which vary as the ratio of their three dimensions. Of the three first-mentioned forms, it is difficult to decide which is most injurious, yet these are the favourites with the community, because of their cheapness (?), and with the contractors because of the proportionately large margin of profit and necessity of frequent repairs. By this general and brief analysis, we are induced to believe that stone of a regular geometrical form is that which is most suitable for the purpose; cement being an artificial monolith, whose dimensions may be extended at pleasure, is included in this class.

A tramway in connection with a "Belgian" block system would fulfil all the requirements in the best and most economical manner. Trams, 8 in. deep and 2 ft. wide, if well laid, would oppose the least possible resistance to the wheels of vehicles, and would be noiseless, whilst the blocks between would furnish the desired foothold, and the clicking of the horses' feet give sufficient warning of the approaching vehicle. This arrangement supposes the conditions of the horse and carriage to remain constant, and until lately it has been assumed that these elements of the problem were fixed, but rubber tires have been introduced and give great satisfaction. Still the roughness of the pavement required to furnish the necessary foothold has been found to cut and destroy them so rapidly as to render their general introduction improbable. If now we can substitute for the present shoe a material that will prove as durable and as secure, at the same cost, it will open the way to great reforms in all the elements of locomotion—viz., the pavement, the vehicle, and the power. Such an improvement has, indeed, been made and tested satisfactorily. It consists of a hollow shoe of the ordinary shape, open at the bottom, and having iron studs projecting vertically downwards through a $\frac{3}{4}$-in. tarred rope, which they hold in place, and which serves as a packing. The shoe is put on without heating, and held in place by six nails. It has been used until worn down to a knife edge, and its life is quite as long as that of the ordinary iron shoe. The rope is not kicked out by use, but is, in fact, riveted firmer by the pounding down of the studs. The general introduction of such an improvement would undoubtedly lead to the substitution of concrete for the rumbling pavements now in use. The chief objection, lack of sufficient foothold, having been overcome, minor difficulties need have but little weight, as that portion of the surface overlying sewers, &c., might be divided into blocks, which could be readily removed and replaced. The necessity of breaking the surface for pipes could easily be avoided by laying them hereafter under the sidewalks or in rear of the dwellings, in streets of the second class. What must be the waste of energy that will set in vibration the houses on both sides of a street whenever a vehicle passes? Yet the injury is not limited to the vehicle, the edifice, nor the road covering, all of which are badly shaken up, but extends in a greater degree to the animal life affected by it: the horse, and the individuals in the house or conveyance. It is a constant strain upon the nervous system of women, invalids, and children, whose sleep is disturbed and restless. This enormous waste of energy can, and should, be avoided by recourse to proper engineering expedients, and no one will deny that a uniformly smooth, even, and continuous surface, such as that furnished by a good cement pavement, with only joints enough to permit of expansion, would fulfil in the most perfect manner all the requirements for the horse, carriage, passenger, and resident, could be kept perfectly clean, and when once laid, would require the minimum amount of expense for repairs and police.

NOTES AND QUESTIONS—VARIOUS.

Tom Thumb Candytuft.—This new White Candytuft is a valuable addition to border annuals; it is dwarf, very compact in habit, and flowers most profusely, the blossoms being as white as snow.—R. Greenfield, *Priory, Warwick.*

Large-flowered Cereus.—When looking over the collection of plants belonging to Mr. C. M. Major, Cromwell House, Duppas Hill, Croydon, I saw a Cereus grandiflorus with larger flowers than those of the common one; it is evidently a fine variety. The petals are wider and paler than those of the type, and the stems are more spiny and stronger. It was imported from Demerara, and is evidently quite distinct. Have any of your readers seen this variety?—J. Croucher.

Godetia Lady Albemarle.—This fine new crimson Godetia deserves a place in all gardens where a bold, showy flower is desired. It is compact in habit and free-flowering, commencing when it is about 6 in. high, and continuing on in bloom until it is nearly 2 ft. in height. The flowers, which are bell-shaped, are deep crimson, with white centres; with me it has been in bloom for six weeks, and promises to keep on flowering for some time to come.—R. Greenfield, *Priory, Warwick.*

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* By Prof. Lewis M. Haupt, in the "Journal" of the Franklin Institute.

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> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

WILD FLOWERS IN FLORAL DECORATIONS.

Some weeks ago (see Vol. XI., p. 465) I gave a description of a vase of wild flowers which I had arranged, and I now propose to describe the same vase decorated with early autumn flowers, as it presented even a prettier effect than when done with spring or early summer blossoms. As some of my readers may not have read my former paper on the use of wild flowers for floral decorations, I shall again describe the form of stand in which I arranged my blooms. It was made of basket-work varnished dark brown, and its form was that of a flat tazza, out of which rose three rods tied gipsy-fashion in the form of a tripod, on which rested a tazza of smaller size than that below from which the tripod rose. Round the edge, lightly placed so as to show up against the damask cloth, I placed small fronds of Bracken (Pteris aquilina), and then filled in the tazza with blooms of Hemlock, Ox-eye Daisies, Clover, Fairy Flax, Marsh Marigold, Vetch, Tormentil, Trefoil, Mallow, Blackberry, Tansy, Horse-tail, Grasses, and Oats; up the tripod stems I twined sprays of the Deadly Nightshade, some of which bore blooms and others tinted berries. I then filled the upper tazza with similar flowers to those employed below, but selected smaller-sized blooms and branchlets; round this stand I grouped four specimen glasses, in which were arranged similar flowers and Grasses, and a few sprays of Oats. Just at this season the latter will be found most useful for floral decorations, be they vases of wild or hothouse flowers, as in either case they will tend to give a light and effective appearance, and Grasses are not now easy to obtain, save by those who cut and dried them last month for autumn and winter use, as, owing to the hot weather and the mowers, many cannot now be found in the meadows or hedgerows. Sprays of Horse-tail will also be found useful to intermix with blooms; it is often to be found in damp ditches and along the sides of old or unused roadways. I have often found varieties of this plant growing freely on railway embankments; along the latter, where much chalk is used in their construction, can often be found charming bits of colouring at this season in the way of sprays of the wild Geranium and similar flowers, the foliage of which, when growing on chalk, limestone, or any very dry spot, and exposed to the rays of the sun, assumes a lovely crimson tint, in shade similar to the Virginian Creeper; I have found even leaves of the common Dandelion growing in such places, tinted with the most lovely shades. Unless one saw an arrangement with these descriptions of scraps employed in its construction, it can hardly be believed what a pretty effect is obtained; branchlets of Blackberry blooms are very pretty to employ in floral decorations, but the thorns of this plant should be removed from the stems before they are placed in a vase amongst other flowers, as otherwise they catch in the other stems and drag the arrangement out of shape. I know that many are under the impression that arrangements of wild flowers last but a few days; but that is a mistake, as by introducing a few fresh leaves and Grasses I have kept an arrangement of the above description on my breakfast-table quite a week; indeed, at the present moment I have one in use which has lasted in good condition four days, and it looks as fresh as ever, though I have not added a single spike of Grass to freshen it up. I do not employ many Poppies in my decorations, only just a few to give a dash of colour, as they do not last so long as other flowers, though I have kept them fresh four days; after that they change their colour if they do not drop their petals. Just at present large quantities of the pretty mauve-coloured Ononis arvensis (Rest Harrow) are to be found on Streatham Common; this will be found most useful for floral decoration in vases of trumpet shape or in specimen glasses.

Annie Hassard.

BOUVARDIAS FOR WINTER.

Few plants have gained popularity more rapidly in our flower markets than the beautiful white-flowered Bouvardia jasminiflora, the cut blooms of which form the principal white flowers obtainable during the winter and spring months. Another kind, though not new, B. Humboldti corymbiflora, is now being grown extensively, and will no doubt soon become as great a favourite as B. jasminiflora. Its flowers, though not so freely produced, are much larger than those of the kind just named, and they possess the valuable property of lasting longer in a cut state. This sort, however, grows too large ever to become a really good market plant, as unless bushy plants loaded with flowers can be obtained in from 6-in. to 8-in. pots they are of little value in Covent Garden, large plants not being appreciated. Bouvardias are brought to market in a flowering state nearly all the year round, and no flowers in bouquets are more universally admired and prized. The white-flowered kinds are mostly used, but a scarlet variety, probably B. Hogarthi, is sometimes employed with good effect in floral decorations in which bright colours are desirable. B. jasminiflora was formerly grown under the name of B. longiflora, but from this kind it differs in being of a much freer-branching habit of growth, its leaves are longer and narrower than those of that sort, and the flowers are produced in greater abundance; no kind, however, can equal in habit and floriferous properties B. jasminiflora, the flowers of which are also more fragrant than those of any other kind. Visitors to Covent Garden Market during the summer time must have remarked the difference that exists between Bouvardias offered for sale and those with which one generally meets in private establishments. Country growers, as a rule, use the knife too sparingly in the case of Bouvardias, and, therefore, instead of handsome, bushy plants 1 ft. or so high, and as much through, clothed with healthy foliage to the pot, as may generally be seen in Covent Garden, we find long, spindly shoots furnished with brown-looking foliage, and bearing at the points a single truss of starved-looking flowers. The more that bloom is cut from Bouvardias, the more profusely do they flower, and, of course, they become more bushy. For supplying cut bloom during winter and early spring, some florists near London grow as many as 5000 plants. These are obtained from cuttings struck in spring, and also consist of older cut-down plants that had not hitherto been disposed of. During the winter months a somewhat brisk temperature is kept up in houses in which Bouvardias are grown to supply cut bloom, and some, as soon as the flowers begin to expand, remove the plants into a cooler temperature in order to harden the blossoms a little before they are cut. After the blooms have been cut the plants are again placed in a warm, moist temperature, in order to promote new growth and another crop of bloom. In summer, when cut flowers begin to get cheap, these Bouvardias are allowed to come fully into flower, and are sold in the market in the form of plants. One London grower annually sells wholesale between 20,000 and 30,000 plants of B. jasminiflora and a scarlet-flowered kind, in 5-in. and 6-in. pots. The way in which they are grown is as follows:—In autumn the old plants which have done flowering are cut down and placed in a moderately dry and cool temperature. After Christmas is over a little more heat is given them, and they are occasionally syringed overhead; this has the effect of starting into growth a number of shoots from the bases of the old plants; these, when sufficiently firm, are taken off and inserted in sharp sandy soil in thumb or 3-in. pots, and placed on a bed of Cocoa nut fibre in which there is a gentle heat. These cuttings under favourable circumstances soon strike root, when they are potted in 5-in. or 6-in. pots in good fibrous loam, peat, and leaf-mould, or rotten manure. As they advance in growth they are gradually subjected to a cooler and more airy atmosphere than that in which they were struck, and when fully established abundance of air and light is admitted to them, and they receive copious supplies of water at the roots. From these plants cuttings are taken to come on in succession; they are taken off when the plants have made three or four joints, the two lower joints only being left on the plant. From these joints strong shoots are soon emitted, and these, when 4 in. or 5 in. long, are also stopped, an operation which is continued until the plants have been stopped four times. Each set of cuttings is treated in the same way. Those struck first in the year make excellent bushy plants by the following autumn; and the last taken off, which is in August and September, make good plants early in the following spring. The old plants, from which the early cuttings were taken, are also grown on and make bushy, well-flowered plants early in summer. In order to obtain large specimens, which are, however, seldom needed in market gardens, old plants are cut back year after year, shaken out, and re-potted. During the summer, Bouvardias are grown in cool houses or cold pits, and sometimes in temporary frames, but in autumn, winter, and spring a temperature of about 55° is maintained, except in very severe weather, when a few degrees lower will not injure them. Some have lately taken to plant out their Bouvardias in the open air, and lift them in the autumn. For this purpose cuttings are struck in autumn or early in spring, and stopped in the same way as just mentioned; after being hardened off, they are planted out in June in beds, or in shallow trenches of rich soil, the surface of which is mulched with manure; abundance of water is given to the roots, and early in September, when the plants show bloom, they are carefully lifted with as much ball attached to them as possible, potted, and afterwards put into a shady place; they are well watered overhead and at the roots, and when fully established are placed in houses or pits to come into bloom. In staking, market growers only place one neat stick in the centre of each plant, to which, by means of fine pieces of bast, shoots are supported. Red spider and green fly sometimes attack the foliage, but frequent fumigations, syringings, and liberal culture soon counteract this evil, and little damage is done. C. S.

Gynerium jubatum.—This variety of the Pampas Grass, recently introduced from Chimborazo by the well-known plant collector Roezl, and sent to me by M. Lemoine, of Nancy, in the spring of last year (producing a single spike last autumn), seems to be by far the earliest blooming of its family that I have yet seen, as though none of my numerous other large plants are yet showing any sign of throwing up their bloom-spikes, my plant of G. jubatum has nine of them now fully developed, several of which are now nearly 4 ft. high, and look as if they would expand their feathery inflorescence within the next fortnight. This early flowering will make this variety intermediate between the Arundo conspicua and the ordinary Pampas Grass.—W. E. G.

Ornamenting Stove Walls.—I was very pleased a few days ago, when going over the grounds of Mr. Marsh, at Hardwicke, Chepstow, by an arrangement, novel to me, as regards the back wall of the stove. It was lined with Moss, enclosing about 3 in. of a compost consisting of peat and leaf-mould, the whole being kept in its place by wire-netting. In this lining have been carefully planted, with due regard to artistic effect, various Orchids, Begonias, Tradescantias, Ferns, &c., the whole of which are flourishing remarkably well, the Begonias being furnished with better leaves than I ever remember seeing elsewhere. The wall in question presented a charming appearance, so different from a whitewashed wall simply relieved by a few climbers, which is generally to be found in such houses. One end of a greenhouse was also treated in a similar manner, but it was planted with hardier plants, mostly Ferns.—S. H., *Epsom.*

The Colorado Beetle at Liverpool.—As our readers are doubtless aware, two living specimens of this beetle were last week discovered in the docks at Liverpool. One was found in a cattle ship from New York, and had evidently come out of the fodder brought to feed the cattle on board, and although the other was not so well traced, it was taken about the same time, and it is said at no great distance from the cattle ship. The fodder was fortunately exhausted by the time the vessel had got into dock, so that there is no reason to fear that the beetles have been distributed by the sale of the surplus fodder. There is, however, still room for anxiety from the incident. If both, as seems not unlikely, came from the same ship, we can hardly expect to have been so fortunate as to capture all that came. The chances are that there would be more than two, and these will have made good their landing unnoticed. We shall not, therefore, be at ease about this vessel's importation until three weeks or a month have elapsed. If no field be attacked by that time, the probability is that we have escaped; until then every one about Liverpool should keep a sharp look-out for the insect. Since the above was in type, a supplement to the "London Gazette" has been issued, containing an Order in Council on the subject of this beetle. The Order extends to Great Britain only, and is to have effect from the 31st inst. The Order states that "it shall not be lawful for any person to land Potato haulm, leaves, or stalks brought from the United States of America, Canada, or the German Empire;" and that "the Commissioners of Her Majesty's Customs may in any case, if they think fit, order the collection and destruction of any sand, dirt, or other refuse imported with Potatoes brought from the United States of America, Canada, or the German Empire, and detain the Potatoes until such destruction has been effected." The Order contains the following provisions:—"If the owner of, or any person having under his charge, any crop of Potatoes, or other crop, or vegetable, or substance, finds, or knows to be found thereon, the Colorado beetle, in any stage of existence, he shall, with all practicable speed, give notice of the fact of the same being so found to a constable of the police establishment for the place where the same is found. The constable shall forthwith give notice thereof to the local authority, and the local authority shall forthwith give notice thereof by telegraph to the Privy Council. It shall not be lawful for any person to sell, or expose or offer for sale, or keep any living specimen of the Colorado beetle, in any stage of existence, or to distribute in any manner any such specimens. If any person fails to do anything which he is required by this Order to do, or does anything in contravention of this Order, he shall be deemed guilty of an offence against this Order, and shall, for each offence, be liable to a penalty not exceeding £10."

Influence of the Scion on the Stock.—In reading in The Garden (see p. 147) your extract from Mr. Murray's account of his experiments on the flow of the sap, I was surprised to find him stating as an unquestioned fact that the scion never influences the stock, and this he holds to be confirmation of his theory. But is it strictly true? Mr. Burbidge, in "Cultivated Plants, their Propagation and Improvement," gives a list of well-authenticated cases in which the scion had affected the stock in a very marked degree. Two rather remarkable instances have also come under my own notice this summer, and which may perhaps interest those who are paying attention to the sap controversy. In one case a line of Laburnums had been budded in 1876 with a variegated variety; most of the buds died, but this summer many of the stocks are variegated precisely like the variety which was budded on them. In the other case several Laburnums had been budded (some of them grafted) about 5 ft. from the ground with the golden variety lately sent out by Mr. Smith, of Worcester. Most of them "took," but, strange to say, suckers on several of them which had been allowed to grow assumed a beautiful golden-yellow hue, just like that of Mr. Smith's variety. The suckers were all below the bud or graft, some of them close to the ground, a circumstance which seems to me to present a strong argument against Mr. Murray's theory.—A Young Propagator.

Emmenanthe penduliflora.—This interesting novelty is a member of the Natural Order, Hydrophyllaceæ, which contributes Nemophila, Phacelia, Whitlavia, and a few other genera to our gardens, and like the plants just named, is an annual of low growth, not usually exceeding 1 ft. in height, and of neat tufted habit. The foliage is pinnatifidly cut, with rounded lobes, and resembles that of the Nemophilas, the flowers being produced in loose terminal racemes, and are somewhat pendulous in their full development, but at first erect. The corolla is of pale primrose yellow, campanulate in form, about ½ in. in length, slightly exceeding the calyx-lobes. It is not improbable that careful cultivation and selection may bring about an increased development of the corolla, which at present is scarcely so long as could be desired, but the very neat habit of the plant and the character of its foliage render it quite deserving of attention on the part of amateurs and others. It is a native of Southern California, and succeeds perfectly as a hardy annual on any ordinary soil.—W. Thompson.

Regular-bearing Apples.—The following are not only regular and abundant bearers, but they become fruitful at a very early date after planting, viz.:—Cox's Orange Pippin, King of the Pippins, Keswick Codlin, Cellini, Old and New Hawthornden, Lord Suffield, Dumelow's Seedling or Wellington, Dutch Mignonne, and London Pippin. These are well adapted for small gardens, either as espaliers or bush trees.—J. Groom.

Victoria Marrow Pea.—This is a fine variety for the late summer months. We have at present some rows of it literally loaded with pods from near the base to as high as a man can reach. This has certainly been an exceptionally favourable season for Peas; but what is of importance is that the pods are not only fine and numerous, but are quite full of Peas, which is not the case as regards some of the newer kinds, the yield of which is greatly out of proportion to the bulk of the pods.—J. G.

Liquid Manure in Vineries.—I have used manure-water extensively for over eight years in my Vineries, and with excellent results; that from pigsties is the best.—H. Harris, *Denne Park, Horsham.*

NOTES OF THE WEEK.

Curious Fact about Variegation.—Three or four years ago I had a plant of a variegated Rhubarb given me, the leaves being a good deal blotched with yellow; and not knowing very well where I could put it, I planted it in the kitchen garden at the end of one of three rows of Rhubarb, in quincunx order, as in the subjoined plan. Last year two or three of the plants nearest to the original variegated one became more or less blotched with yellow. This year four have become as much variegated as the original plant. Can any of your readers give an explanation of this (to me) singular fact?

2 5 . . .
1 4 . . .
3 . . . .

1, original variegated plant. 2, 3, 4, 5, much variegated this year. —J. G. N.

Strawberry Duke of Edinburgh.—This is the favourite market Strawberry round Edinburgh; it is a very large and highly-coloured fruit, a free grower, hardy, prolific bearer, and has a very good flavour. Ten fruits of this variety sometimes weigh 1 lb.; it is a medium variety as regards the season of ripening. It was raised by Mr. Moffat, market gardener, of Caldwells, near Dalkeith, and is now being sent out by the Lawson Seed and Nursery Company, of Edinburgh.

Opuntia Raffinesquiana in Flower.—Mr. Barr, of King Street, Covent Garden, has sent us some blooms of this Cactus. They measure nearly 4 in. across the petals, which are of a rich satiny texture, and of a pale canary colour, surrounding a tuft of orange-coloured stamens. It is quite hardy, and well fitted for rock-gardens, raised borders, or any position where its succulent vegetation may not be bruised or otherwise injured.

Erythrina Crista-Galli.—A fine specimen of this Coral tree, growing at the end of one of the plant-houses in Messrs. Veitch's nursery at Chelsea, now forms a striking object. It is furnished with some fifty strong shoots, from 2½ ft. to 3 ft. in length, all of which are thickly beset with blossoms and healthy green foliage. In sheltered positions this Erythrina might be isolated on lawns or large borders with good effect.—S.

The Catalpa.—This tree is now in full flower in the London parks, and even in some of the squares. In the distance it resembles a cloud of flowers, or closely examined it is a lovely object, and its form and stature fit it well for town and city gardens; its shade is also dense and long-enduring. It might with great advantage be planted near houses in town gardens, and in streets for which the Plane is too large and the leaves of the Lime too short-lived. It also deserves attention on account of its season of flowering, inasmuch as a tree full of blossom early in August is not a common sight. We want more trees that flower in summer and autumn, most of our wealth being in spring-flowering trees.

The New Zealand Flax Flowering in Scotland. — While visiting the fine old garden at Fordell, near Inverkeithing, the other day, I was delighted to see in a clump on the terrace lawn, lying to the south of the old Castle, a fine specimen of this Flax in flower. It has produced two spikes 9 ft. high, each spike being furnished with about eighteen clusters of reddish-brown flowers. The leaves, which are upright, are about 5½ ft. long. This plant has been growing in its present situation for about twenty-five years, and this is the first time it has ever shown flower; it is, too, the first plant of the kind that I ever saw in bloom in the open air in Scotland.—J. McN.

Double Ivy-leaved Pelargoniums.—Amongst the many kinds of Pelargoniums which have been introduced into gardens of late years, few excel in usefulness the double-flowered Ivy-leaved kinds, of which there is a good collection now in flower in Mr. Bull's nursery at Chelsea. Either for pot or outdoor culture, these Pelargoniums are very valuable, and they are also very effective as vase or window plants. The flowers, which are of good form, vary in colour from white to pink and rose. Such plants cannot fail ere long to be largely grown for bouquet-making and other floral devices, for which they are admirably adapted, as they last in good condition in a cut state much longer than some kinds of Pelargoniums.—S.

Fuchsia Earl of Beaconsfield.—This seems to be one of the best Fuchsias for general decorative purposes that have been raised of late years. It is the result of a cross between F. fulgens and F. Perfection. In form the flowers resemble those of F. fulgens, but they are produced in much greater profusion than in that species. Plants of it growing in pots in Mr. Laing's nursery at Forest Hill show how freely it flowers, many of the shoots bearing clusters consisting of no fewer than fifty blossoms. The plant is robust in habit and well furnished with large, glossy green leaves, which set off the carmine and salmon-coloured flowers to advantage. For training under the roof of conservatories or greenhouses, or for draping pillars, this plant is well adapted, and if planted in good soil and liberally supplied with water, it will continue to bloom the whole year round. It will no doubt soon be largely grown for market purposes.

Darlingtonia californica at Glasnevin.—The noble specimen of the Californian Pitcher-plant at Glasnevin is just now swelling a fine seed capsule, the result, it is hoped, of a cross with one of the kindred Sarracenias.—"Irish Farmers' Gazette."

Antirrhinums.—A large bed of the semi-dwarf forms of this hardy biennial, now in bloom here, is truly beautiful, the colours and markings being of a very varied description. Among them may be found flakes, selfs, and bicolors in rich variety—pure white, yellow, rose, red, purple, crimson, and all sorts of intermixtures. The seed was sown under glass early in March; the seedlings were pricked out into a frame in the first instance, and thence planted out into the open ground early in June. They began to bloom about the middle of July, and will continue to flower in profusion until the end of October.—A. D., *Bedfont.*

Dwarf Fruit Trees Best.—That a decided advantage is gained by market gardeners who plant dwarf, standard, or bush-trained Apple trees between taller-growing ones, is this year proved by the fact that in many orchards in the neighbourhood of London, on old-established trees, with stems 12 ft. high and heads in proportion, scarcely a fruit is to be found, whilst trees between them, with stems about 2 ft. high and bushy heads, are bearing a fair crop. This is at least the case with Apples, and no doubt it also applies to other fruits.—C. S.

The Water Melons.—A few of the seldom seen fruits of the Water Melon may now be seen in Covent Garden. They are quite distinct from the oval-shaped kinds generally seen about London under this name. When grown and well ripened in hot countries the Water Melon is a great favourite. In the true Water Melon the flesh is scarlet and the seed is black. In summer, Melons of this kind are exceedingly refreshing. Perhaps they might be grown successfully in any ordinary pit or frame in this country in summer. The fruits in the market weigh about 12 lb. or 13 lb. each, but they sometimes attain a weight of from 40 lb. to 50 lb.

Seedling Petunias at Sydenham. — In the Crystal Palace Nursery large beds of single-flowered seedling Petunias form a remarkable feature. The plants throughout are one mass of bloom, consisting of colours varying from pure white to dark purple. Selfs and striped flowers occupy separate beds, and considering how easily such plants as these may be grown, and how effective they are, either in mixed colours or otherwise, their value for forming masses on banks, or for covering mounds of roots or stones, or, where preferred, for border-planting, cannot be overrated.

A New Park at Westminster.—It is stated on good authority that London is to have a new park, to be made by the demolition of a small number of houses, mostly private, situate in the immediate neighbourhood of the new Palace of Westminster. The details of the plan have not been settled, but it is pretty generally understood that its object is primarily to isolate the palace from certain dangerous neighbours, and, in the second place, to contribute by picturesque landscape adornment to the architectural effect of that agglomeration of buildings which now covers Thorney Island.—"Tatler."

Dasylirions after Flowering.—I have a good plant of Dasylirion gracile which has thrown up a flower-stem; would it injure the plant or not to cut it off? It is now about 3 ft. above the top of the leaves, and has reached this height in about eight days, though in a perfectly cold greenhouse. What height may the flower-spike be expected to reach?—Subscriber. [The flowering of Dasylirions is not a very common occurrence, inasmuch as they usually attain a considerable age before they bloom. If the flower-stem had been cut out when it first began to push, it is just possible that the plant might have formed a growing crown that would have gone on producing leaves in the way the plant has done heretofore; but as the spike has made so much progress, nothing will be gained by cutting it out. The height which it will attain will wholly depend upon the strength of the plant; it may reach 8 ft. or 10 ft. or more. In all probability, after flowering, the plant will form a number of small crowns in the shape of suckers near the collar, or at the top, just below where the flower-stem has sprung, or both; these, as they are produced, may be taken off and struck, and thus a considerable stock may be obtained; but it is not likely that the plant itself will again be equal to what it has been previous to flowering.—T. B.]

A large Mushroom is said to have forced its way through 12 in. of concrete covered with a thick layer of asphalte, in the floor of the Savings Bank department of the General Post Office in London.

TREES AND SHRUBS.

LARGE WALNUT AND OTHER TREES.

Having observed in The Garden of July 14 the description of two large Walnut trees, the one at Downland House, Hants, the other at Rufford Abbey, Notts, and also an inquiry as to where the largest Walnut trees are to be found in Great Britain, allow me to bring under the notice of your readers a very fine Walnut tree growing at Edmonstone, near Edinburgh, the seat of Sir J. D. Wanchope, Bart. Its girth at 3 ft. above the ground, where it divides into three limbs, is 16 ft. 9 in.; the girth of the limbs severally is 8 ft. 8 in., 8 ft. 6 in., and 6 ft. 2 in.; the branches cover a circumference of 242 ft. At the same place there are also some fine Spanish Chestnuts. The girth of one of these at 3 ft. above the ground is 15 ft. 3 in., and at 6 ft. 6 in. from the ground, where it divides into two limbs, it is 18 ft. 9 in. Another of these, at 3 ft. above the ground, measures 14 ft. 6 in. I may also mention that there is at the same place an Oak grown from an acorn planted by the present proprietor's grandfather, about 110 years ago, which now measures 12 ft. 6 in. at 3 ft. from the ground. There are also two handsome Tulip trees in the grounds, one of which has flowered profusely every year for certainly upwards of fifty years. Unfortunately this was much damaged last year by an unusually early snow-storm in November before the leaves were off the tree. Scotia.

—— There is a large Walnut tree at Leversdown, near Bridgwater. Its girth 2 ft. above the ground is 17 ft.; and at 5 ft., 14 ft. 8 in.; the length of the stem up to the crown, is 10 ft.; girth of first branch, 10 ft.; circumference of branches, 275 ft. The branches would have covered a greater circumference, but a huge limb was blown down a few years ago.—D. K. T.

SALE OF TIMBER AT LONGLEAT.

The following are the average prices realised for the principal lots sold at our annual timber sale, which took place last week:—

	Average contents		Average price realized. per ft.	
	ft.	in.	s.	d.
100 Oak trees	16	0	2	2
187 ,,	12	0	2	1
31 Beech trees	30	0	1	3
135 ,,	19	0	1	3¼
26 Ash trees	21	0	2	7
16 Elm trees	31	0	1	2
15 Scotch, 2 Spruce, and 2 Larch Fir trees	12	6	0	11¼ each.
176 Oak Saplings			4	8
193 Fir and other poles			2	3

The bidding was brisk throughout; although the timber was mostly of small dimensions, and the British timber trade still flat and depressed, the prices are higher than those obtained last year; indeed, the sale altogether was very satisfactory, and commanded higher prices, in proportion to the size of the timber, than any sale that has taken place in the neighbourhood during this season.

G. B.

CONIFERS IN SOMERSET.

The late owner of Mells Park, the Rev. J. S. H. Horner, was an ardent lover of trees, and was one of the early Conifer enthusiasts; his son (the present owner) is also equally interested in Conifers, and is continually adding some choice plants to the collection. The Pinetum was commenced about 1845, and occupies one of the higher portions of the park. Unfortunately, the strata underneath the immediate surface are the least favourable beds on which to establish a collection of Conifers, the percentage of lime in the soil, perhaps, being too great for them to flourish in perfection, the result of which is that many of the oldest specimens present a rusty and withered appearance. As may be judged from the appended list, there is a great variety of Conifers, some of which are uncommon. Pinus Ayacahuite is a distinct and beautiful variety, and is healthy and thriving. This tree somewhat resembles Pinus excelsa in the habit and length of its leaves, but the colour of the latter is nearer to that of P. Strobus; it is, I believe, a very rare specimen—indeed, it is the only one I ever remember to have seen. P. romana is a distinct variety, its globular-shaped head being very conspicuous. P. monticola is a good neat, pretty Conifer; it is healthy and thriving. P. Escarena, P. Lemoniana, P. Pallasiana, and P. pyrenaica are robust specimens; they are, however, to my mind, coarse-growing trees of the Pinaster type. Wellingtonia gigantea is thriving beautifully in the coal measures clay; the specimens exhibit healthy, robust pyramids of foliage; probably if the Pinetum had been formed on the clay, instead of the conglomerate and limestone formation, the Conifers generally would have been much larger and healthier than they now are. Picea grandis, P. cephalonica, P. Nordmanniana, and P. Pinsapo are all beautiful varieties. Abies Albertiana is growing rapidly—it is a graceful Spruce; A. orientalis, too, forms a neat, handsome specimen for a lawn; A. Douglasi and A. Smithiana are of grosser growth, but both are handsome specimens. Taxodium sempervirens is well represented by a fine, vigorously grown tree; it would have been probably the tallest specimen in Britain had it not lost its leader for several years; it has, however, now formed a new leading shoot, and promises to thrive well. The three Cypresses are noteworthy plants, each presenting a distinct and beautiful habit. Libocedrus decurrens is a good plant, its deep green glossy foliage and columnar habit being very distinct. The following Table contains a list of some of the best specimens, the measurements of which were taken on April 3, 1877:—

Name.	Height		Girth at 5ft. up		Geological formation.
	ft.	in.	ft.	in.	
Abies Albertiana	19	0			Mountain Limestone.
,, Douglasi	66	3			,,
,, orientalis	30	0			,,
,, Smithiana	34	5			,,
Arthrotaxis selaginoides	6	3			Conglomerate.
Biota orientalis	17	0			,,
Cryptomeria elegans	9	10			,,
Cupressus Lawsoniana	20	0			,,
,, macrocarpa	47	6	4	8	,,
,, sempervirens	24	0			,,
Fitzroya patagonica	9	10			,,
Juniperus venusta	12	0			,,
,, recurva	18	0			,,
,, virginiana	27	8			,,
Libocedrus decurrens	20	0			,,
Picea pectinata	103	0	9	5	,,
,, cilicica	7	4			Mountain Limestone.
,, cephalonica	46	0	3	10	,,
,, bracteata	9	3			,,
,, grandis	25	10			,,
,, Lowiana (lasiocarpa)	6	10			,,
,, Nordmanniana	34	6			,,
,, Pinsapo	36	0	3	10	,,
,, Webbiana	26	9			,,
Pinus Ayacahuite	37	0	3	0	,,
,, insignis	53	0	6	1	,,
,, monticola	58	3			,,
,, densiflora	11	2			Conglomerate.
,, Escarena	46	0	5	4	,,
,, Lemoniana	43	0	5	8	,,
,, Massoniana	7	5			,,
,, monspeliensis	8	0			,,
,, Pallasiana	35	0	5	2	,,
,, ponderosa	37	0	3	10	,,
,, parviflora	13	6			,,
,, pyrenaica	42	5	4	9	,,
,, romana	30	0	3	2	,,
,, uncinata	25	0			,,
Taxodium sempervirens	53	0	5	9	,,
Wellingtonia gigantea	38	0	4	9	Coal measures Clay.
	32	3	4	0	,,

There are also many smaller plants of recent introduction, while some large specimens that appeared to be deteriorating I did not think worth measuring. To all lovers of Conifers a visit to Mells Park and an inspection of its trees could not fail to be interesting. George Berry.

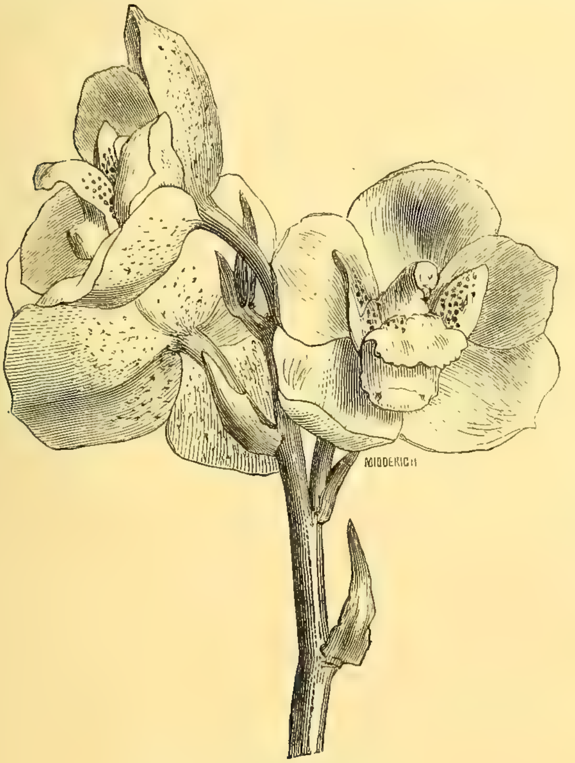
Longleat.

Pine Tree Oil.—Between Bordeaux and Bayonne there is a large stretch of sandy desert, whereon there is little vegetation save here and there patches of Pine trees. From these trees there runs a resinous matter which is collected and sold by the inhabitants of the region. This substance has recently been studied by M. Guillemare, and he has now announced to the French Academy of Sciences that he has produced three kinds of oil from the material, all rich in carbon, containing respectively 80, 90, and 92 per cent. of that element. The light yielded on burning the oils is remarkable for its whiteness and steadiness, and is said to be suitable for lighthouse illumination.

THE INDOOR GARDEN.

THE DOVE-PLANT (PERISTERIA ELATA).

This beautiful Orchid is a native of Panama, where, on account of the striking resemblance which the column of the flower bears to a dove, it has been looked upon with no little consideration. The same religious feeling that gave the Passion-flower its name by the inhabitants of this country, is shown in the name "El Spirito Santo," the Holy Ghost plant; it is also called the Dove-plant, and the connection between these two appellations is very evident, when we remember that the dove is an emblem of the third person of the Trinity. Many plants have been placed in this genus by different botanists, which have since been removed into Acineta. P. elata is the handsomest of the four or five species which are retained. Its green, striated, pseudo-bulbs, are about as large as a swan's egg, and bear from three to five strongly-ribbed leaves, sometimes 3 ft. or more long by 6 in. broad; the flower-stems spring from the base of the pseudo-bulbs, and attain a height of from 4 ft. to 6 ft.; the upper third of this is occupied by the spike of nearly globose, beautifully-scented flowers, measuring about $1\frac{1}{2}$ in. across; the colour is creamy-white, with the exception of the labellum, which is dotted with purplish-rose. The plant will succeed in either the East India or Cattleya-house; it should be potted in loam or leaf-mould and well drained, as during its period of growth it requires a good deal of water, while when at rest it should be kept nearly dry. It is usually propagated by division. Q.



The Dove-plant (Peristeria elata).

TIMELY AND JUDICIOUS RE-POTTING.

The shifting of a plant from one pot into another is an operation which calls forth a considerable amount of judgment and care on the part of the operator. In this, as in most other gardening operations, it is difficult to lay down a code of rules. The growth, general habits, and root-action of most kinds of plants vary to such an extent that only extensive practice, combined with close observation, will enable even the amateur or professional cultivator to work with confidence and certainty. When one considers, for instance, the contrast which two such plants as the Cape Heath and Fuchsia afford—the one making its growth and capable of being grown into a large specimen in a few months, the other requiring years of patient toil to bring it to the same dimensions—it is not difficult to realize how vast is the field over which this branch of gardening extends. A suitable compost must be chosen, proper drainage ensured, and not the least important point deserving of careful attention is that of seizing the right moment in which to transfer the plant into a pot of larger dimensions. Those who may wish to grow pot plants to any degree of perfection (especially if large, well-developed specimens be desired), must not fail to make timely shifting an especial study. In the case of thick, free-growing genera this latter point cannot be neglected with impunity, for although a few days' delay may not at the time produce any very marked effect, yet to this cause may often be attributed the want of freedom in growth, which later on is often observable. Given a quantity of healthy plants possessing, so to speak, a lively root-action, some very marked and even surprising results may be obtained by a judicious choice of the right moment when to re-pot. Those who may never have devoted any especial consideration to this part of plant culture would find it very interesting and profitable to institute a few experiments therein. Take, for instance, a batch of Cinerarias, plants that must be grown on without a check if handsome specimens be desired. Suppose them to be in 3-in. pots with the roots touching the sides, shift a portion of them, reserving the remainder to be operated upon at intervals of two days, finishing the whole within ten days. Treat them all alike, placing them where they may enjoy the same conditions of light, air, &c., and mark the difference in a month's time. The size will vary according to the time of potting: those first potted will take a lead that they will never lose, and, as I have before stated, this difference will often be so great in the ultimate size and appearance of the plants thus treated that the grower will scarcely be able to realize that the few days' delay in re-potting should alone be sufficient to produce such an effect. There is, however, not much difficulty in accounting for this, as a plant when once brought to a standstill either through want of nutriment or from some other cause, commences to harden and solidify its tissues; it lapses, in fact, into a state of semi-rest, from which it must be moved before free growth can again ensue, and hence the loss of time which can never afterwards be regained.

The rule generally observed is to allow the pot to become well filled with roots before placing the plant in another; this, though applicable to many tribes of plants, cannot be invariably adhered to. Those plants possessing very fine fibrous roots, such as the Azalea, Cape Heath, &c., should not be shifted until they have fairly filled the soil with fibre; in fact, great care must at all times be exercised not to overpot plants of a hard-wooded nature. There is, nevertheless, no advantage to be gained by retarding the shift when once this object is attained, the great point being to catch the plant at the moment or rather just before it comes to a standstill, for every hour's delay after that stage is reached is so much time lost, and will detract in a proportionate degree from the future excellence of the specimen. Even in the case of such comparatively slow-growing subjects as Ericas, Epacris, &c., a great increase of size and vigour may be attained by well-timed and judicious shifting. I say judicious, for herein must the grower summon his judgment and powers of observation to his aid; he must be enabled to tell by the general appearance of the plant before him how far it will be capable of responding to the call which he may make upon its growing powers. The health, vigour, and general appearance of the plant as well as the state of the root will all have to be taken into account. If a healthy young plant be placed so that the roots enjoy a free uninterrupted root-action in congenial soil, it will outstrip those grown in pots; the reason of this naturally is that the plant receives no check during its growing season, and as it grows the roots extend, and find nourishment in proportion; it does not therefore cease to increase in bulk until it has either attained its full development, or the season arrives when it should mature and perfect its growth. This affords a good illustration of the necessity of keeping up the supply of nutriment when grown in pots, and tells us that if we wish to make the most of the growing season we must pay timely attention thereto. In some cases we may with advantage transfer a plant from a small pot into a larger one in which it is destined to remain and perfect itself; where this is practicable, a much more rapid development takes place, and plants thus treated acquire proportions not to be attained in the ordinary way. This one-shift system, however, can only be practised with success by those possessing great experience in pot culture, as the subsequent treatment in the way of watering, &c., must be carried on with considerable judgment. It is chiefly plants of a free-growing, somewhat succulent nature, such as the Calceolaria, Cineraria, and some of the freer-growing kinds of stove plants and climbers, that may be operated upon in this manner, and certainly magnificent specimens may be obtained by this mode of treatment. Amateurs should, however, feel their way in this matter; a few plants may be experimented upon, but, as a rule, the comparatively inexperienced should not run the risk of over-potting. The less quantity of earth used at each shift, the less danger is there of the same becoming sour and unfit for the fibres to penetrate, and the slower the natural growth of the plant the greater care must be exercised in this respect. It may be adopted as a general rule in re-potting that plants of a free habit of growth (which will include the greater portion of the so-called soft-wooded section) should be shifted as soon as the ball is sufficiently permeated with fibres to allow of its being handled; but those having wood of a harder nature should have the pots well filled with roots before being placed in larger pots.

The rules just given will, of course, be found susceptible of considerable modification and variation, which the grower will gradually be enabled to adapt to his particular wants, and to the peculiarities of the plants which he desires to cultivate. The one important point to be always held in view is to re-pot as soon as the need for it is observed. It is, I fear, a somewhat common failing to imagine that a few days' delay will not make much difference, but it is often just those few days of neglect or attention in which the future career of the plant is made or marred.

John Cornhill.

Byfleet.

Torenia Fournieri.—This new species of a well-known old genus will doubtless be much used for pot culture when better known; the habit of the plant is more compact than that of T. asiatica, and its flowers, though smaller, are richer in colour and more freely produced. For pans, baskets, or vases this will be found to be a very useful and interesting plant. It has been in flower in several of the London nurseries during the whole of the summer, and with liberal treatment would no doubt flower quite nine months out of the twelve. It is also now blooming freely as an edging plant in flower gardens in Paris. No doubt it would also thrive in sunny spots in southern England.—S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

A Winter-flowering Plant for the Dinner-table.—On Pereskia stocks about 4 ft. in height and tied to stakes, insert grafts of Epiphyllum truncatum in March, placing Moss round the grafts and keeping them in a moist heat. When "taken," remove the Moss and any superfluous shoots belonging to the stock. Grow on the plants thus treated all summer, ripening them as much as possible in autumn, and by Christmas they will come finely into flower.—R. Gilbert.

Dracæna Goldieana.—This, one of the most distinct Dracænas that has been introduced of late years, is now very attractive in one of the plant houses in Mr. Bull's nursery at Chelsea, where its green and bronzed tesselated leaves form a striking contrast to the brightly-coloured foliage of Crotons and other fine-leaved plants with which it is associated.—C. S.

Semi-double Gloxinias.—These are by no means rare, but as yet they can scarcely be termed meritorious. I have recently seen a number of them in flower, but I cannot help considering them good flowers spoiled. The outer calyx is not continuous but disjointed, a circumstance which gives the flower a ragged appearance; if, however, it can be so far improved upon as to be developed into a perfect outer calyx, as is seen in some of the forms of the Canterbury Bell, it may then become very effective. These forms of Gloxinia are well worth the attention of the florist.—D.

THE FLOWER GARDEN.

CULTURE OF PANSIES AND VIOLETS.*

Let us suppose that an amateur cultivator has procured a collection of Pansies of all classes, say in September or October, and that being afraid to risk them in the open ground all winter, he has prepared a compost of about three parts good rich loam and one part leaf-mould and silver or pit sand; let us suppose further, that he has got the plants into 4-in. pots and in a cold frame close to the glass, that he has plunged them, giving them at all times as much light and air as possible, all he will then have to do will be to water them with soft water when required, and guard against too much damp, as damp is a far greater enemy to Pansies than frost. If it be intended to bloom the plants in pots, then they should be re-potted in February or March into 8-in. or 10-in. pots, using the same compost as before, but with the addition of one-fourth part of the best old manure obtainable (old well-rotted cow-manure being preferable). The compost should be in good working order, by being prepared beforehand and protected from too much wet at this season of the year. The pots must be well drained, and after potting they should be again plunged in cold frames or pits, close to the glass, as before, admitting at all times plenty of light and air. When the plants have become established in the pots, and the days longer and milder, they should be supplied with plenty of good soft water, and it will be advantageous, in the case of weakly plants especially, to add a little guano to the water occasionally, or what is better, have a cask with a mixture of liquid manure, consisting of guano and soot, and add a small quantity of this mixture to every pan of water, as it is much safer to give a small quantity often than to give a large dose say once or twice a week. As the plants grow it is advisable to furnish them with small stakes, to keep them from being broken by the wind. If blooms be wanted early, say for competition in May or beginning of June, the lights will require to be taken off the frames only seven or eight hours during the heat of the day; but if they be required for the end of June or July, then the plants should be grown as coolly as possible, with the lights altogether off, except for protection from heavy rains or wind.

For growing Pansies in the open ground any good piece of ground will do. As regards the position of the beds, much difference of opinion exists, but for my part I would prefer an open piece of ground, free from the shade and the roots of trees, and for early sorts a border facing south or west is best. If the ground be poor it might be trenched over and plenty of good old manure, and any good free soil forked into it, and thoroughly exposed to the winter's frost and rain; and if the situation be wet it ought to be drained. When it is convenient to prepare the ground the year before it is wanted for Pansies, it should be well trenched, adding plenty of good manure, and a crop of Potatoes, Turnips, or other vegetables may be taken off it, when it could either be planted in autumn or ridged up all winter, and be ready for planting in spring. Autumn planting ought to be finished by the end of September; during hard frost the beds might with advantage be protected by branches or mats, or in cases where the collection is not extensive a pot could be put over each plant. Spring planting ought to be finished by the end of March; the plants require to be inserted up to their shoulders firmly, leaving only the head out of the ground. Plant from 10 in. to 12 in. apart each way, and I would recommend small stakes to be put to them at once, as it would save many from being broken by the wind. Water them with soft water in order to settle them into the ground; give the surface of the bed from time to time a good stirring, and in dry weather a good watering will be beneficial; but were the beds well mulched with old manure or Moss it would serve to keep the plants damp and cool all summer, and save much watering.

These remarks apply more particularly to what are now known as Show Pansies, but the cultivation of Fancy or Belgian Pansies may be said to be the same, except that the soil in which they are grown should be a little poorer, and that they should not be planted in the open ground until spring, as they do not seem to be quite so hardy as the Show kinds. They ought also to be planted a little wider apart, as they are, as a rule, more vigorous in growth. This class of Pansy is rapidly improving, so rapidly, indeed, that each year's seedlings cast those of the previous year into the shade. Bedding Pansies and Violas have proved to be most useful, although at first they met with some opposition. When I first began to improve them I collected all the kinds that would hybridize together, and very soon I had under cultivation V. cornuta, montana, calcarata, stricta, lutea, amœna, palmaensis, tricolor, &c.; by means of these I obtained a good start, and complete success has been the result. I have found it to be a matter of the first importance to breed yellows from yellow, whites from white, and so on. I am indebted to V. stricta for substance, to V. amœna for habit, and for yellow to V. lutea, and without observing the above rules success in hybridising need not be expected. The qualities to be looked for in the bedding Pansy and Viola are habit and good foliage, and profusion, substance, colour, and size of blooms. The best way to succeed with the Viola is to practise deep cultivation, to give plenty of good old manure, and plant early, so as to get the plants well established before hot weather sets in. These remarks of course apply equally to the culture of the Show and Fancy Pansies, and I may add that both must have a change of ground every year.

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* Read by Mr. James Grieve, of Pilrig Park Nurseries, at a recent meeting of the Scottish Gardeners' Association.

Pansies and Violas are propagated by means of seeds, cuttings, and division of the roots. Seed should only be gathered from the best sorts, and care should be taken to see that it is ripe before it is gathered; it may be sown at any time, but I have found it best to sow in August and September in pots, and as soon as the young plants will bear handling, to prick them out in pans or boxes, and winter them with the general collection; they will then be ready to plant out in lines the following March and April. Cuttings may also be taken at any season, but July, August, and September are the best months for propagating the general collection; select for this purpose young shoots from the centre and sides of the plants; good short-jointed pieces from 2 in. to 3 in. in length are best, and if a heel or small root can be got with them, so much the better. Where a large stock is wanted, it is a good plan to nip out the centres of the main shoots, when a host of small ones will soon spring up from the centre of the plant, and if a handful of sand be shaken loosely into the middle of the plants, it will encourage small roots to form at the base of every shoot, and thus enable them to be taken off ready for planting every two or three weeks. For cuttings, no place is better than the foot of a north wall or hedge, and for late cuttings a cold frame or pit. The soil should consist of a mixture of loam, leaf-mould, and plenty of good sharp river or pit sand. They should be sheltered during severe storms of wind or rain, but when shading is required, it ought only to be continued as short a time as possible, as it is apt to make the cuttings "draw" too much and not root; when rooted, they require to be removed from the cutting bed and planted in the open ground, watered, and shaded for a short time. A damp day or evening is best for this purpose, and by this means a stock of well-rooted, short-jointed plants will be secured for either autumn or spring planting. The old stools may be lifted and divided if required, but propagation by means of cuttings is preferable as well as more economical where stock is required.

In exhibiting Show and Fancy Pansies they are seen to best advantage on neat stands painted green, without paper cards. The largest blooms should be placed in the back row, and the colours should be arranged so as to produce the best effect. Violas are best shown in bunches, and a Dahlia or Rose stand is very suitable for that purpose. As the show day approaches it will be well to collect the blooms as they expand every morning and place them in large bowls of clean water, changing it every day; place them in a cool, shady house, and they may be preserved fresh from three to six days, according to the state of the weather. When shading the blooms on the plant is resorted to, use a small covering sufficient to shade the bloom only and not the whole plant. Before arranging the blooms on the exhibition stands, I lay them all out on clean paper for about an hour, by which time they will be a little flagged and more easily handled without the risk of breaking their stalks or splitting the under petals in laying them on the stands.

PROPAGATING CENTAUREAS.

Amongst silvery-leaved plants these are unrivalled, either for masses in contrast with dark-foliaged or brilliant-flowered plants, for which C. ragusina and candidissima are well adapted; or as vase or single specimen plants, for which C. gymnocarpa and Clementei are the most effective. There is, however, a very prevalent opinion that Centaureas are difficult plants to increase by means of cuttings; and so they are if one adopts the ordinary moist bottom-heat plan, as being of a woolly, fibrous character, they require a longer and slower process than soft-wooded plants, in order that the base of the cutting may be properly callused before roots can be emitted, after which success is certain. Where Centaurea cuttings are struck in heat and moisture, a great percentage of them rot, whereas by adopting a cooler and drier method, I have annually struck hundreds of them with only few losses. The cuttings are always selected with a heel of old, firm wood attached to them, and they are taken off with a very sharp knife; they are prepared in the usual manner, and are inserted singly in 3-in. pots, the soil in which is pressed firmly, and the leaves are tied up to a single stake, as both leaves and roots are very brittle. A good soaking of water is then given, and they are placed in an ordinary frame on a coal-ash foundation, and shaded from direct sunshine for a week or ten days, after which they may gradually be inured to more light and air until they commence to grow, when the sashes may be kept off entirely. The hardier they are kept the better, as they will mostly withstand an ordinary winter; but the protection of a glass structure is indispensable, in order to ensure success. They should not be excited into growth during the dark days, but, on the other hand, they must not suffer from drought; about the end of March they may be set out-of-doors in a sheltered position, and finally in April planted in their summer quarters. Thus treated, young plants make good edgings for Coleus, or for any dark-foliaged plants; they grow up into an even mass without pegging or training, and continue in good condition the whole season, flourishing alike in moist or dry weather, and they even continue unblemished when the frost has cut down the more tender occupants of our summer gardens; in mild winters, indeed, the majority of them will remain uninjured, but the plants get too large for ordinary bedding purposes where uniformity of size is desired. They may also be increased from seed, but cuttings procured about the first week in August will, as a rule, be found the most satisfactory.

J. Groom.

Henham.

HARDY ASCLEPIAS.

To this genus belongs a large group of plants exclusively confined to the New World, and with but few exceptions, to the northern portion of it; consequently almost all of them are hardy in this country. Some of the species furnish excellent fibre, the silky down of the seed-vessels of others is used for bedding purposes, and the young shoots of certain kinds are eaten by the Canadians, who also extract from the flowers a kind of saccharine matter. The genus contains about forty species principally herbaceous plants, with stout creeping roots, and a thick milky juice, which in some species is very abundant, and in others scarcely perceptible. They are for the most part very ornamental, and will be found useful both in the wild garden and shrubbery borders, where they can ramble at pleasure. Amongst the few which are suitable for select borders that figured on p. 156 is one of the best. The following are a few of the most distinct :—

Asclepias tuberosa (the Butterfly Weed) is one of the most beautiful of our autumnal flowers; it is a hardy perennial, having a thick, ligneous root, and erect leafy stems about 2 ft. in height, crowned with terminal corymbs of bright orange-red flowers. It prefers a warm, sandy soil, and when thoroughly established is a very ornamental plant. It bears seeds occasionally during hot autumns; from which good flowering plants may be obtained in three years.

A. Cornuti—syriaca of some (the Common Milk Weed).—This is a strong-growing species, which attains 4 ft. in height; it has large, oval, downy foliage, and erect stems, bearing nodding umbels, lateral as well as terminal, of deep purple flowers, which are exceedingly fragrant. Bees seem to be fond of this plant, and from the fact of its being quite hardy, easily increased, and lasting a considerable time in bloom, it would prove valuable as a bee flower.

A. INCARNATA (Swamp Milk Weed).—This attains 3 ft. in height, and has long, lanceolate leaves, and smooth stems, leafy to the top and divided, bearing erect umbels of rosy-purple flowers in pairs. The variety called pulchra has broader foliage than that of the type, and pubescent.

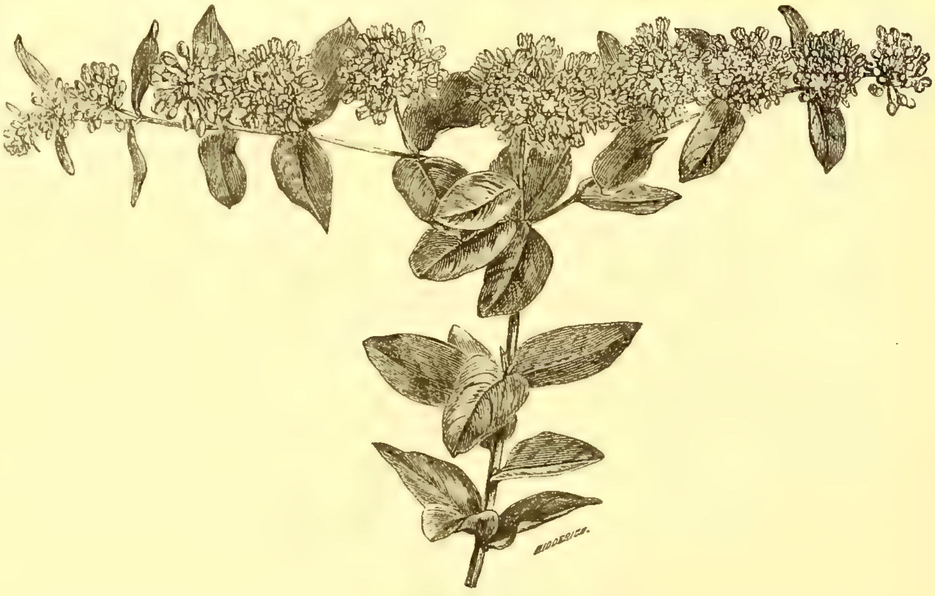
A. PURPURASCENS (amœna, Mich.).—This is a very distinct species, the stems of which are slender, and from 2 ft. to 3 ft. in height; the leaves are elliptical, the upper ones more pointed than the others, smooth above and silky beneath, having terminal and lateral umbels of bright purple blossoms.

A. VARIEGATA (Variegated Asclepias).—Stems spotted and downy, from 2 ft. to 3 ft. in height; leaves ovate, somewhat undulated; flowers white, with a reddish centre, in large umbels, both terminal and lateral. This is one of the showiest of Asclepias.

A. RUBRA (acuminata, Pursh.).—This very distinct kind has long, lanceolate, bright green foliage, and stems from 3 ft. to 4 ft. in height; umbels large, deep purplish-red, from two to five on a naked, terminal peduncle.

A. QUADRIFOLIA.—Leaves in whorls of four, generally leafless on the lower portion of the stem, which is slender and about 2 ft. in height; flowers pink with white centres.

A. SULLIVANTII.—This is a tall-growing kind, somewhat similar to A. Cornuti, but the flowers are larger and deeper in colour, and very fragrant; the leaves are ovate-oblong and smooth. A few others are also worth mentioning, viz., A. tomentosa, salicifolia, mexicana, obtusifolia, ovalifolia, laurifolia, nivea, and phytolaccoides, all of which are more or less showy and valuable for shrubbery borders or the wild garden. A. P.



Asclepias tuberosa.

Eustoma exaltatum.—The genus Eustoma has been long represented in our gardens by Lisianthus Russellianus, a plant which now unfortunately is seldom seen. Though inferior in the size of its flowers to that species, the E. exaltatum is described by collectors as having blossoms of a beautiful deep gentian blue, spotted at the base, the corolla being somewhat tubular and less expanded than in E. Russellianum. It grows about 1½ ft. high, having opposite heart-shaped, stem-clasping, entire glaucous leaves, the flowers terminating the stems on slender peduncles. It is probably a greenhouse biennial, requiring to be sown in a hotbed or forcing pit, and should be transplanted singly as soon as large enough to handle, the long slender rootlet suffering if disturbed at a more advanced period of growth. Sandy peat and loam will probably meet its requirements. Seeds of it were collected in Southern California.

Delphinium cardinale.—This, the original Scarlet Larkspur, first introduced to cultivation by Messrs. Veitch & Son about twenty-five years ago, had, as is well known, been almost, if not entirely lost to gardens at the date of the introduction of the hardier and dwarfer Delphinium nudicaule, now recognised as being one of the most valuable of recent acquisitions. This gradual disappearance of a plant so distinct and novel has been supposed to indicate a constitution unsuitable to the English climate, but it was more probably due to the fact that, unlike its hardier congener, it failed to produce seed in any quantity, and being like that, a short-lived perennial requiring frequent renewal by seed, the means for this perpetuation being wanting, the plant naturally died out. That it would be extensively cultivated, in company with the D. nudicaule, were its merits known and seed available, there is no doubt. It is perfectly distinct from the D. nudicaule, to which it is closely allied, being a taller plant, in which feature it agrees with the variety elatius. It differs, however, from all the forms of D. nudicaule in the shape and colour of its flower, which is more open and rather larger, of a brighter scarlet with a decided yellow centre. The foliage is also larger and more deeply cleft, usually nearly to the base. As affording an easy means of identifying this species in its very earliest stages of growth, it may also be stated that when germinating the seed invariably produces distinct cotyledons or seed leaves, between which the plumule or embryo stem arises as in most other plants, whilst in D. nudicaule the seed-lobes and their foot-stalks are confluent and the plumule emerges laterally. The same peculiarity shows itself in the germination of D. tricorne. D. cardinale blossoms at a later period of the summer, and continues longer in flower than D. nudicaule, owing in part to its slower development. It is a most desirable plant, apparently as hardy as D. nudicaule, having survived the winter of 1875-6 without the least protection in sandy soil. Seedlings will probably not flower till the second season. In very damp soil it would be prudent to protect the root with a hand-light or inverted pot in winter.

Eriogonum umbellatum Sileri.—This was received under the name of E. corymbosum, but having flowered during the past summer, it has proved to be a very showy and robust large-flowered form of E. umbellatum, to which it is so much superior that it will eventually supersede it. In its general habit it agrees with the type, but has taller and stouter scapes, broader umbels, and larger flowers of a brighter yellow. The foliage is oblong-lanceolate, more or less white on the upper surface, and slightly so above, forming a tuft with a few sterile, procumbent shoots, from the centre of which the scapiform stem, 12 in. to 15 in. high, is produced. As in the other species of this genus, the perianth of the flower retains its colour for a considerable time, especially in fine dry weather, and continues its development during the growth of the Nut-like fruit which it encloses. The plant is a native of Utah, and probably of the adjacent States, and is, of course, perfectly hardy.—W. THOMPSON, *Ipswich.*

Orchis foliosa.—I recently saw over seven hundred plants of this in flower at one time in the Lawson nurseries at Edinburgh. They are planted out in sheltered corners in peat soil, and are only disturbed occasionally for purposes of increase.—V.

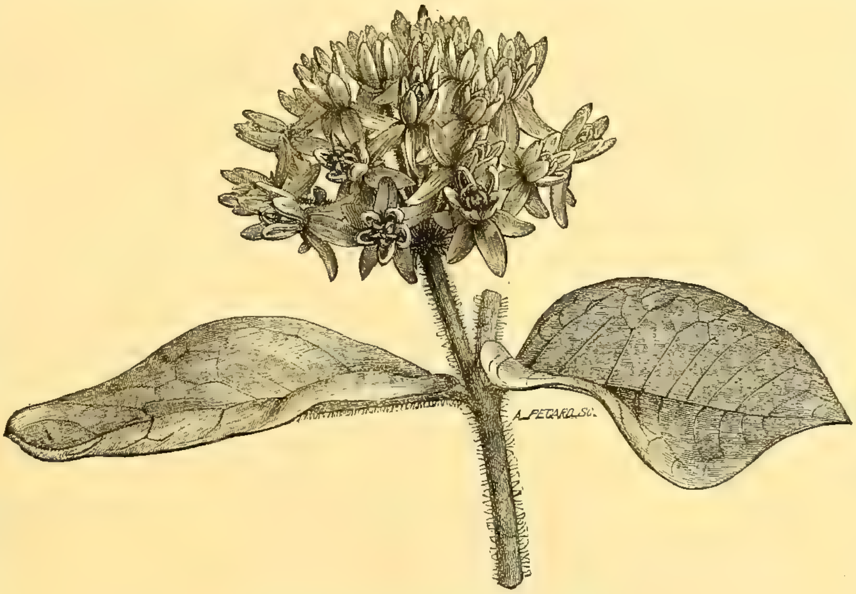
Embothrium coccineum Flowering a Second Time.—This beautiful flowering shrub (known as the Fire-bush) after blooming most abundantly here (Co. Cork) in its ordinary season during nearly the whole of the month of May, when it was covered almost from top to bottom with brilliant bunches of scarlet Honeysuckle-like blossoms, has during June made a most vigorous growth of young wood all over the tree, and is now showing on the extreme top two bunches of its bright scarlet bloom. I should like to know if other growers of this fine shrub have noticed a similar second blooming in one and the same year.—W. E. G.

THE LARGE VINE AT FINCHLEY.

As an indoor market fruit garden Mr. Kay's establishment at Finchley has long been known as one of the most important near London, especially as regards Grape culture. Its glass structures consist of low span-roofed or lean-to houses, varying from 40 ft. to 80 ft. in length, and by growing late and early sorts of Vines in them a supply of good Grapes is secured from early in April until the following March. The kinds which succeed best here are Black Hamburgh, Black Alicante, Lady Downes, and Muscat of Alexandria; a few others are grown, but not to a great extent. The principal Vine here, however, is that known as the Finchley Vine, which has for years produced very heavy crops of fine fruit. The house, a span-roofed one, in which this Vine is grown has on several occasions been lengthened, in order to give it additional room; it is now 90 ft long and 18 ft. wide, a space wholly occupied by this one Vine, which enters the house at one side, about the middle. Its main stem, which measures at the bottom nearly 2 ft. in circumference, crosses the roof, and from this issue ten strong rods, 6 in. to 8 in. in circumference, half of which are trained each way horizontally under the roof. On this Vine there are at the present time about 500 well-formed bunches of Grapes, which average about 2 lb. each, the berries being very large and promising to colour perfectly. The border, like those of other Vineries here, is outside; it is about 15 ft wide and 4 ft. deep, and was made on a hard, clayey bottom, on which was placed a quantity of brick rubbish, &c., to form drainage; the soil consists of ordinary loam and brick rubbish, such as can be obtained in any place where building is going on. No manure was mixed with the soil, but the border receives a yearly dressing of manure in the autumn to protect the roots during winter and spring, and from which the roots no doubt derive considerable nourishment. This Vine is pruned on the spur system; the wood is well ripened every year by allowing abundance of air and light, and could the house be farther enlarged, and the border also, it would doubtless become one of the very finest in the kingdom. The earliest Vineries have of course long since been cleared of their fruit, and are being succeeded by that on the large Vine and a fine crop of Muscat of Alexandria, the bunches of which are remarkably compact, and the berries of a bright amber colour covered with a rich bloom. Among late Grapes a house filled with Lady Downes Seedling and Black Alicante is well worthy of notice. It is a low lean-to, about 70 ft. in length, and in a northern aspect. The crop is in every way excellent, and in such a position the fruit ripens equal to that grown in a more sunny situation, and being late in ripening it can be preserved in good condition for a long time, provided the atmosphere of the house is kept dry and airy. Most of the Vines have from four to five canes each, old ones being removed when desirable. As soon as the Grapes are cut, the houses are thrown open and the Vines exposed to the full influence of the weather, in order to properly ripen the wood and clear it of insects, should any exist. Most of the canes in the late houses are allowed to carry from twelve to fifteen bunches each, all of which they ripen perfectly.

To Peaches are devoted two span-roofed houses, each about 40 ft. in length. Each house contains two trees, which completely cover the roof; these trees are of great age, the stems, where they enter the house, being at least 2 ft. in circumference, and they have this year borne a very heavy crop of large, well-ripened fruit, although in many places complaints have been heard of Peaches dropping off this season. The wood is kept thin by timely disbudding and pruning, and when the crop is gathered every means is employed to get the wood thoroughly ripened, a condition indispensable to the production of good crops. During the time the Vines and Peach trees are at rest, plants are grown under them, such as Pelargoniums, Fuchsias, Solanums, Hydrangeas, Cytisus, &c. Cuttings of these are struck during the summer and autumn, potted and placed out-of-doors or in cold frames until unfavourable weather sets in, when they are removed to the Vineries, in which there are erected stair-like stages within a few feet of the glass, on which the plants are placed. Hydrangeas are remarkably well grown here; a large piece of ground outside is occupied by fine bushy plants of them, which furnish a supply of cuttings whenever required, and from here come many of the plants in 6-in. pots, bearing enormous heads of bloom to be seen in Covent Garden during the spring and summer. In this way all available space in the garden, both indoors and out, is turned to profitable account—conditions very essential in market gardens near London, where land is so valuable.

C. S.



Flowers of Asclepias tuberosa (natural size).

TERMS IN DESCRIBING FRUITS.

It is only by a uniform and definite use of terms that descriptions can be made intelligible to the reader. Hence a full explanation of these terms becomes a matter of importance. Distinctive characters should be permanent, and not liable to variations with a change of locality, soil, season, or climate; or, if variable, the nature of such variation should be distinctly pointed out. To assist the cultivator the more fully to understand written descriptions, the devotion of a few columns to a clear explanation of the terms used may prove useful.

I. Growth of the Tree, Shoots, and Leaves.

The form of growth often affords a good distinctive character of varieties, not liable to great variation. Young trees, only a few years old, usually exhibit peculiarities of growth more conspicuously than old trees of irregular spreading branches. Hence, in all cases, where this character is mentioned, it refers to young trees not more than three or four years from the bud or graft, unless otherwise expressed.

1. Shoots are *erect*, when they rise nearly perpendicularly from the main trunk or stem, as in the Early Strawberry Apple and Bartlett Pear (fig. 1).

Diverging, when they deviate from the perpendicular at an angle of about 45°, considerable variation being found in the same tree; as in the Domine and Ribston Pippin (fig. 2).

Spreading, when they more nearly approach a horizontal direction, as in most trees of the Rhode Island Greening (fig. 3).

Drooping, when they fall below the horizontal, a form which many spreading shoots assume, as they become the large branches of older trees.

Ascending, when they curve upwards, as in the Gravenstein Apple, and small Red Siberian Crab (fig. 4). Erect trees usually partake more or less of this quality, but the Early Harvest is free from it.

Irregular, when they assume no very distinct growth, but more or less a mixture of the preceding, as Black Gilliflower, and Summer Bon Chrétien Pear.

Straggling, similar to the next preceding, but with shoots more slender and curved, as Winter Nelis and Black Worcester Pear (fig. 5).

Shoots are *straight*, as in the Early Harvest and Northern Spy Apples; *flexuose*, or more or less deviating from a straight line, as in the Swaar and Roxbury Russet. This distinction is very apparent and uniform in young and very thrifty trees, but not in older ones of feeble growth.

They are *stout*, as in the Red Astrachan; *slender*, as in the Jonathan Apple, and Winter Nelis Pear.

Trees with erect straight shoots when young, usually form more regular and compact heads in older trees; and those of a spreading habit, more irregular or drooping heads.

Some trees which grow very rapidly when young, are small when of full size, examples of which are found in the Late Strawberry and Tallman Sweeting. Others at first grow more slowly, but ultimately become large, as the Esopus Spitzenburgh. Some varieties, again, continue to increase rapidly in size at all periods, as the Northern Spy; while others of feeble growth when small, never attain much magnitude as the Early Joe and Sine Qua Non.

2. *The colour* of the shoots varies greatly in the same variety at different periods of the year, as well as with different degrees of exposure to the sun, and with a change of soil, climate, and season. When fresh or very young, all have a greenish colour, but gradually assume various shades of yellow, olive, brown, red, purple, and nearly black, as the season advances, and as they become bare and are exposed to the sun and weather. For this reason, in describing the colour, the terms must be relative, and can only be correctly applied by a comparison at the time with the colour of other sorts. During winter, and early in the spring, the shoots of most trees become so much darker than at other times, that it is only by practice and by placing the different sorts side by side, that accuracy may be attained. Skilful culturists will readily distinguish, by a glance at the colour of the shoots, many of the kinds they cultivate; but the peculiar cast is hard to describe in words, in the same way that it is impossible to describe the handwriting of an individual, so as to be known from fifty others, although many can, at a glance, know the penmanship of hundreds of different persons. A few of the most strongly marked cases, however, present peculiarities of colour, which form useful points of distinction. No one, for instance, could easily mistake the yellow shoots of the Bartlett and Dix Pears, for the dark brown or purple of the Tyson and Forelle; or the light greenish cast of the Bough and Sine Qua Non Apples, for the dark colour of the Northern Spy, or dark brown of the Baldwin; nor the downy or greyish appearance of the Ladies' Sweeting and Esopus Spitzenburgh, for the clear shining brown of the Gravenstein and Red Astrachan. Nearly all shoots are more or less downy at first, but the down disappears as they grow older. Hence the terms must be used relatively. In Plums, the smooth or downy shoots afford in most cases good distinctive points.

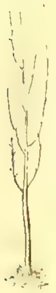


Fig. 1. *Erect.*

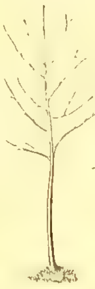


Fig. 2. *Diverging.*

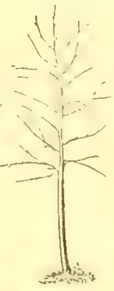


Fig. 3. *Spreading.*

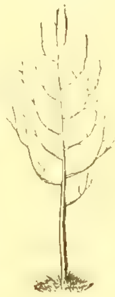


Fig. 4. *Ascending.*

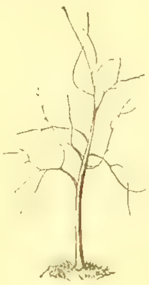


Fig. 5. *Straggling.*

3. *The buds* sometimes afford distinct characteristics. As examples, the large, compact, and projecting buds of the Summer Bon Chrétien always contrast strongly with the smaller, more rounded, and softer buds of the Madeleine. Buds are large on the Swaar and Golden Sweet, small on the Tallman Sweeting and Rhode Island Greening.

4. *The leaves*, in a large number of instances, are of use in distinguishing different varieties.

They are *even* (not wrinkled), as in the Bartlett Pear and Baldwin Apple (fig. 6).

Waved, as in the Tallman Sweeting and Beurré d'Amanlis Pear (fig. 7).

Wrinkled, when the waves are shorter and more irregular, as in Green Sweet (fig. 8).

Flat, as in the Madeleine and Skinless Pears (fig. 9).

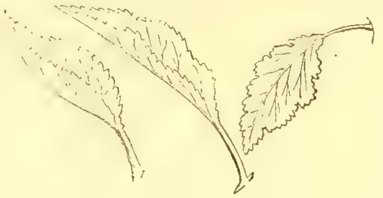


Fig. 6. *Even.* Fig. 7. *Waved.* Fig 8. *Wrinkled.*

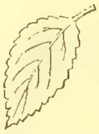


Fig. 9. *Flat.*

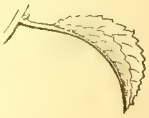


Fig. 10. *Folded.*

Folded and recurved, as in the Easter Beurré and Bon Chrétien Fondante (fig. 10).

Large and wide, as in the Red Astrachan and Huling's Superb.

Narrow, as in the Dyer Apple, and Van Mons Leon le Clerc Pear.

Erect, as in the Early Strawberry (fig. 11).

Drooping, as in Domine (fig. 12). But these two last are indistinct characters, and only to be resorted to in a very few remarkable instances, as most leaves are erect on new shoots, and become spreading or drooping as they grow older.

The *colour* of the leaves may sometimes assist in description, as *light green* in the Yellow Bellflower and Rambo; *deep green*, as in the Rhode Island Greening; and *bluish green*, as in Peck's Pleasant.

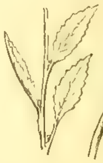


Fig. 11. *Erect.*

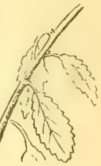


Fig. 12. *Drooping.*

The *serratures*, or saw-teeth markings on the margins of leaves, are characteristics of importance, in many varieties of the Apples, and on the Peach they are so well defined as to form a basis of the classification of varieties.

Leaves of Apples are,

Serrate, or cut with teeth like those of a saw.

Sharply serrate, when every serrature ends in a sharp point, as in the Fall Pippin (fig. 13).

Doubly serrate, when the serratures themselves are again minutely serrated, as in the Vandevere and Drap d'Or (fig. 14).

Coarsely serrate, as in the Swaar.

Crenate, when the teeth are rounded, as in the Esopus Spitzenburgh (fig. 15).

Obtusely crenate, when the teeth are unusually rounded, as in the Bough.

Finely crenate, when the teeth are small, as in the Summer Queen.

When the serratures are partly rounded, and irregularly and rather deeply cut, they become *toothed*, as in Lady's Sweeting (fig. 16).

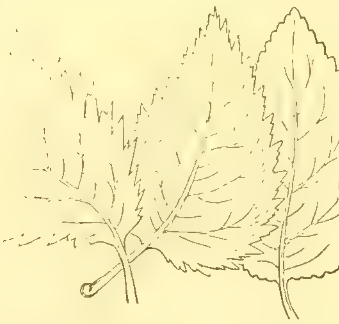


Fig. 13. *Sharply serrate.* Fig. 14. *Doubly serrate.* Fig. 15. *Crenate.*

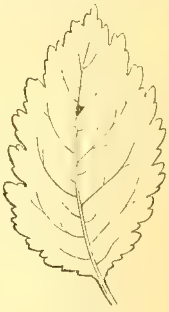


Fig. 16. *Toothed.*

Many varieties present intermediate degrees, as,

Serrate-crenate, partaking somewhat of both, as the Jersey Sweeting and Summer Rose.

Crenate-toothed, as in Bevan's Favourite.

Serrate, slightly approaching toothed, as in Rambo.

Flowers. In Apples, Pears, Cherries, and most other kinds, but little difference exists in the flowers. In the Peach and Nectarine, however, an important division in classification is made by the great difference between those with large and small petals; one class, including the Early Ann, Grosse Mignonne, and others, having large showy flowers; and another class, comprising the Early Crawford, George IV., and many more, having flowers with small narrow petals

II. Form of the Fruit.

In the following descriptions, the *base* of a fruit, or any other part or production of a tree, is the portion towards the branch or root. This is in accordance with the language universally adopted in describing plants. It has, however, been more or less departed from in the common language used to describe fruits, and especially so as applicable to the Pear. This deviation from scientific accuracy tends to confusion, and if simplicity of expression be sought, ambiguity must be avoided. The apex of the stalk of a fruit, however, to avoid the chance of a mistake, may, in all cases, be termed the *insertion.*

The term *apex* should be understood as applying to the part most remote from the branch or root. In fruits it is the part opposite to the insertion of the stalk. In Pears, this part is usually denominated the crown.

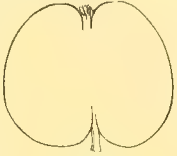


Fig. 17.

The *axis* is a line connecting the base and apex.

A *longitudinal section* is made by cutting an Apple from base to apex.

A *transverse section*, by cutting it at right angles to the axis.

The *length* is the longitudinal diameter; the *breadth* the transverse diameter.

A fruit is *round* when nearly spherical, as the Fameuse and Green Sweet.

Roundish, when varying slightly from round, or when the length and breadth are nearly equal, as the Dyer and Gravenstein.

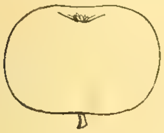


Fig. 18.
Oblate.

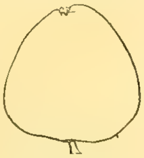


Fig. 19.
Conical.

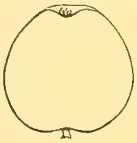


Fig. 20.
Ovate.

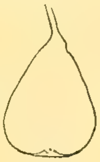


Fig. 21.
Conic.

Obvate, flat, or flattened, when the height is much less than the breadth, as the Rambo and Maiden's Blush (fig. 18).

Conical, when tapering slightly from the base to the apex, as Bullock's Pippin (fig. 19).

Ovate, or egg-shaped, when the length rather exceeds the breadth, with a rounded taper from base to apex, as in the Esopus Spitzenburgh (fig. 20).

Conic, when tapering from the base to the apex as in fig. 21.

Obovate, or reversed ovate, is when the smaller end of an egg-shaped fruit is at the base, as the Buffum and Dearborn Seedling Pears (fig. 22).

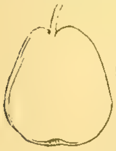


Fig. 22.
Obovate.

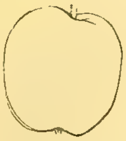


Fig. 23.
Oblong.

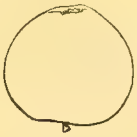


Fig. 24.
Round-ovate.

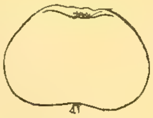


Fig. 25.
Oblate-conical.

Oblong, when the length exceeds the breadth, and the sides are nearly parallel, as Kaighn's Spitzenburgh (fig. 23).

Obtuse, when the parts are rounded or blunt.

Acute, when any part, as neck of a Pear, tapers to nearly a point.

Fruits may partake of forms variously combined, as,

Round-ovate, when nearly round, with a slight rounded taper to apex, as Ladies' Sweeting (fig. 24).

Round-conical, nearly the same as the last, but with the taper less rounded.

Oblong-conical, as the Yellow Bellflower.

Oblong-ovate, as the Black Gilliflower.

Oblate-conical, as the Rhode Island Greening, and Hawthornden (fig. 25).

Depressed, pressed down, sunk, or shortened, applied to the apex of Peaches, Strawberries, &c.

Fattened at the ends, when the base and apex only are flattened, as the Winter Pearmain. An oblong fruit, though not flat may be flattened at the ends; a conical fruit may be flattened at base.

Compressed, pressed together where the sides are flattened, as in some Apricots, Plums, &c.

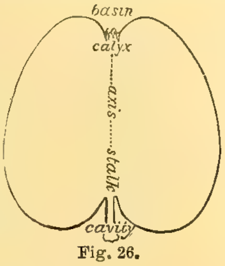


Fig. 26.

The cavity is the hollow in which the *stalk* or stem of a fruit is placed.

The basin is the depression which contains the calyx, eye, or remains of the blossom (fig. 26).

A cavity may be *shallow, narrow, deep, or broad.*

It may be *obtuse,* or somewhat blunt or rounded at bottom, as in the Petre Pear and Pomme Grise Apple (fig. 28).

Acute, when simply ending in a sharp point at bottom, as the Baldwin (fig. 27).

Acuminate, when ending in a long drawn-out taper, as the Fall Pippin (fig. 29). The Holland and Fall Pippin are distinguished from each other by the rather obtuse cavity of the former, and acuminate cavity of the latter.

The Basin is always narrow in any fruit having a narrow or pointed apex (fig. 30); it is usually wide in fruits having a wide or obtuse apex, as the Rambo (fig. 31); but where the rim or boundary is broad and obtuse, the basin may be narrow, as in the St. Lawrence and Gravenstein (fig. 33).

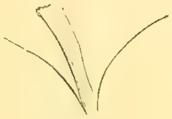


Fig. 27.
Acute.

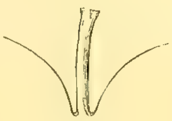


Fig. 28.
Obtuse.

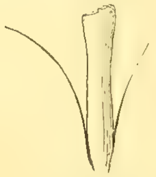


Fig. 29.
Acuminate.

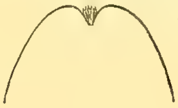


Fig. 30.
Basin Narrow.

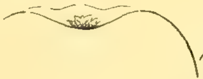


Fig. 31.
Basin Wide.

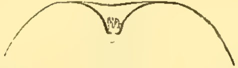


Fig. 32.
Rim Abrupt.

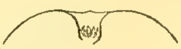


Fig. 33.
Rim Broad.

It is *distinct* when well defined.

Abrupt, when the depression breaks off suddenly from the rim (fig. 32).

Even, when not furrowed or wrinkled.

Angular, with several corners.

Wrinkled, having small irregular hollows and ridges.

Waved, with gentle and irregular undulations of surface.

Furrowed, when more regularly channelled.

Plaited, having small, straight, and regular ridges.

Ribbed, with larger and more obtuse or rounded ridges.

The peculiar forms of Pears render some additional terms necessary:

Many Pears have a *neck,* or narrower part towards the stalk, and a *body,* or larger part towards the crown (fig. 34).

They are distinctly *pyriform,* when the sides formed by the body and neck are more or less concave or hollowed in, as in fig. 34, shown by the dotted lines.

Turbinate, or top-shaped, when the body is nearly round and a short rounded acute neck, as in the Bloodgood (fig. 35).

The form of different Pears is further distinguished by the form of the different parts:

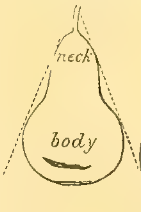


Fig. 34.
Pyriform.

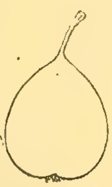


Fig. 35.
Turbinate.

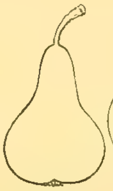


Fig. 36.
Narrow.

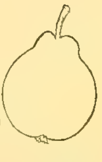


Fig. 37.
Short.

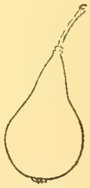


Fig. 38.
Acute.

The neck may be long, as in the Calebasse.

Narrow, as in the Beurré Bosc (fig. 36).

Short, as in the Glou Morceau (fig. 37).

Obtuse, as in the Bartlett.

Acute, as in the Jargonelle (fig. 38).

Distinct, as in the Beurré Bosc.

Obscure, as in the Seckel.

The body may be *heavy* or *large,* when greatly exceeding in size the neck, as the Catillac.

Light or *small,* when not much larger than the neck, as the Washington; in which case the fruit approaches oblong in form.

Oblate, or flattish, as in the Frederick of Würtemberg.

Round, as in the Jargonelle.

Conical, as in the Vicar of Winkfield.

Ovate, as the Marie Louise. Cultivation influences considerably the form of Pears. Thus on a young thrifty tree, the Seckel Pear has a slight neck; on an old heavily laden tree, the neck is obsolete. The body, when ovate or slightly conical on young trees, becomes rounded on older trees, and even flattened in rare instances.

Cherries may be *round, cordate* or heart-shaped, or *ovate.*

Stone Fruits usually have a furrow on one side, extending from the stalk to the apex, termed a *suture* (literally meaning a *seam*), which sometimes occurs on both sides. It is *large,* when wide and deep; *distinct,* when clear or well defined; *obscure,* when faint; *obsolete,* when not existing, or only a faint line on the surface.

Colour of Fruit. The lightest coloured fruit is white, as the Snow Peach; next, yellowish-white; pale yellow; yellow; and deep yellow. The addition of red produces successively, orange-yellow, orange, orange-red, rich warm red. Shades of red, clear red, crimson when darkened, purple when blue is added, violet, less blue than in purple. Amber is a very light yellowish-brown. Fawn colour is a light reddish-brown, with a slight admixture of grey.

A fruit is *striped,* when in alternating broad lines of colour.

Streaked, when the lines or long and narrow.

Marbled, when the stripes are wide, faint, irregular, or waving.

Blotched, of different abrupt shades, without any order or regularity.

Clouded, when the blotches are broader and more softly shaded.

Stained, having the lighter shades of a blotched or clouded Apple.

Splashed, when the stripes are much broken and of all sizes.

Mottled, covered with nearly confluent dots.

Dotted, when these dots or more distinct.

Spotted, when the dots becomes larger.

Texture of Fruit. *Hard,* those which need the artificial aid of cooking to soften them sufficiently, as the Catillac Pear.

Breaking, when tenderer than the preceding, but not yielding to the simple pressure of the mouth, as in the Summer Bon Chrétien.

Buttery, when the flesh forms a soft mass, yielding to the pressure of the mouth, as in the White Doyenné and Seckel Pears.

Melting, when the flesh becomes nearly or entirely liquid by this pressure, as in the Madeleine. These qualities may be combined, as breaking and melting, in the Washington; breaking and buttery, in the Onondaga; buttery and melting, in the Tyson, and in most of the best varieties of the Pear.

The texture may be fine, granular, coarse, gritty, fibrous, tough, crisp, or tender.

The Flavour may be *sweet, neutral, slightly sub-acid,* or mild sub-acid, *sub-acid, acid, very acid,* or *austere; aromatic* or spicy; *perfumed,* or possessing odour, and with more or less of a shade of musk; *astringent,* usually a defect, but sometimes an excellent quality, if in a very minute proportion; *rough,* astringent and austere; *vinous,* rich, high-flavoured, and rather acid; *sugary* or saccharine, sometimes nearly sweet, possessing the qualities of sugar, which may be mixed with acid.

The Quality is designated by *first, second,* and *third* rates; and fruits perfectly worthless by still lower grades. A second-rate fruit, to be worthy of cultivation, must possess other good qualities in a high degree, as hardiness, productiveness, fair appearance, &c. Very few fruits, as low as third-rate, can ever be worth retaining, and only for extreme earliness or other uncommon quality. Fruits that possess desirable qualities are usually designated by three degrees of flavour; the lowest, including the best of second-rate fruits, or "good second-rate," are termed *good;* the lower grades of first-rate fruits are termed *very good,* or *fine;* and the highest quality of all are *best, very fine,* or *excellent.* Examples—Maiden's Blush Apple, Napoleon Pear, Lombard Plum, and Crawford's Early Peach, are *good;* Rhode Island Greening, Bartlett Pear, Graffion or Bigarreau Cherry, and Red Gage Plum, are *very good* or *fine;* and Swaar Apple, Seckel Pear, Downton Cherry, and Green Gage Plum, are *excellent* or *best.*—"Thomas's Fruit Culturist."

Salt v. Vine Mildew.—M. Chatot recommends common salt as an antidote to mildew on Vines. By sprinkling a handful of salt around the base of each Vine, the effect, he says, was marvellous; and Vines hitherto covered with this fungus grew luxuriantly, and had an abundance of Grapes entirely free from oidium.—"Paris Paper."

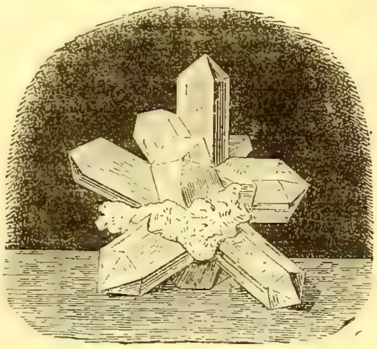
PLATE LXXXVII.

EDWARDSIA GRANDIFLORA.

All the Edwardsias are very ornamental, and well deserving of more attention than they generally receive; so rarely, indeed, do we meet with them in gardens that they may be fairly classed among neglected plants. They are all more or less tender, and even the hardiest of them will only succeed under the protection of a wall with a warm, sunny aspect. By far the most desirable of them is E. grandiflora, a deciduous shrub of from 6 ft. to 10 ft. in height, indigenous to New Zealand, and introduced into this country so long ago as 1772. In its native habitats it forms a spreading bush, and in some districts occurs in such abundance as to form a prominent feature in the landscape, especially in spring when covered with graceful pendulous clusters of golden-yellow flowers. As seen under favourable circumstances in this country it is a distinct-looking, densely-branched shrub, with handsome pinnate leaves, producing flowers in great profusion in April or May before the leaves are fully expanded. Like all the other species it grows freely in almost any kind of soil, but it prefers such as are deep, rich, and at the same time dry, the latter condition, owing to the plant having a tendency to make late autumn growths, being of great importance, inasmuch as under such circumstances it is enabled to ripen its young shoots thoroughly before winter sets in, and thus escape the injury which they would otherwise sustain from severe frost. From its free habit of growth, and the abundance of its twiggy branches, as well as from its great patience under the pruning knife, this fine shrub is admirably adapted for walls or such other buildings as it is desirable to have clothed with foliage; and to those who are making a selection of plants for such a purpose, I cannot too highly recommend it, even although it should be necessary to protect it somewhat from the rigours of exceptional winters, or in very exposed localities. Our figure is from the "Revue Horticole." Hugh Fraser.

A REMARKABLE HAILSTONE.

Amongst the most redoubtable enemies sent by mother Nature to prevent the horticulturist and fruit-grower from becoming too prosperous, hailstones must take a very high rank, for they not only beat down his flowers and fruits, but they smash hundreds of pounds' worth of glass in a few seconds. It is not often that these destructive messengers from the sky arrive here under such a form as the one depicted above. This remarkable hailstone weighed nearly 2 oz., and fell at Grotta Ferrata, a small village near Monte Cavo, in Italy, in September, 1876. The crystals were generally four-sided or hexagon prisms, surmounting by a pyramid attached and at their base to an irregular mass of ice. Some of the hailstones weighed as much as 8 oz., and even more. The damage done to the horticultural produce in the district was enormous. The cut is from a drawing made on the spot by Father Secchi, the learned director of the Roman Observatory.



By recent forest fires in Michigan over 1,500,000,000 standing Pine and other logs have been destroyed.

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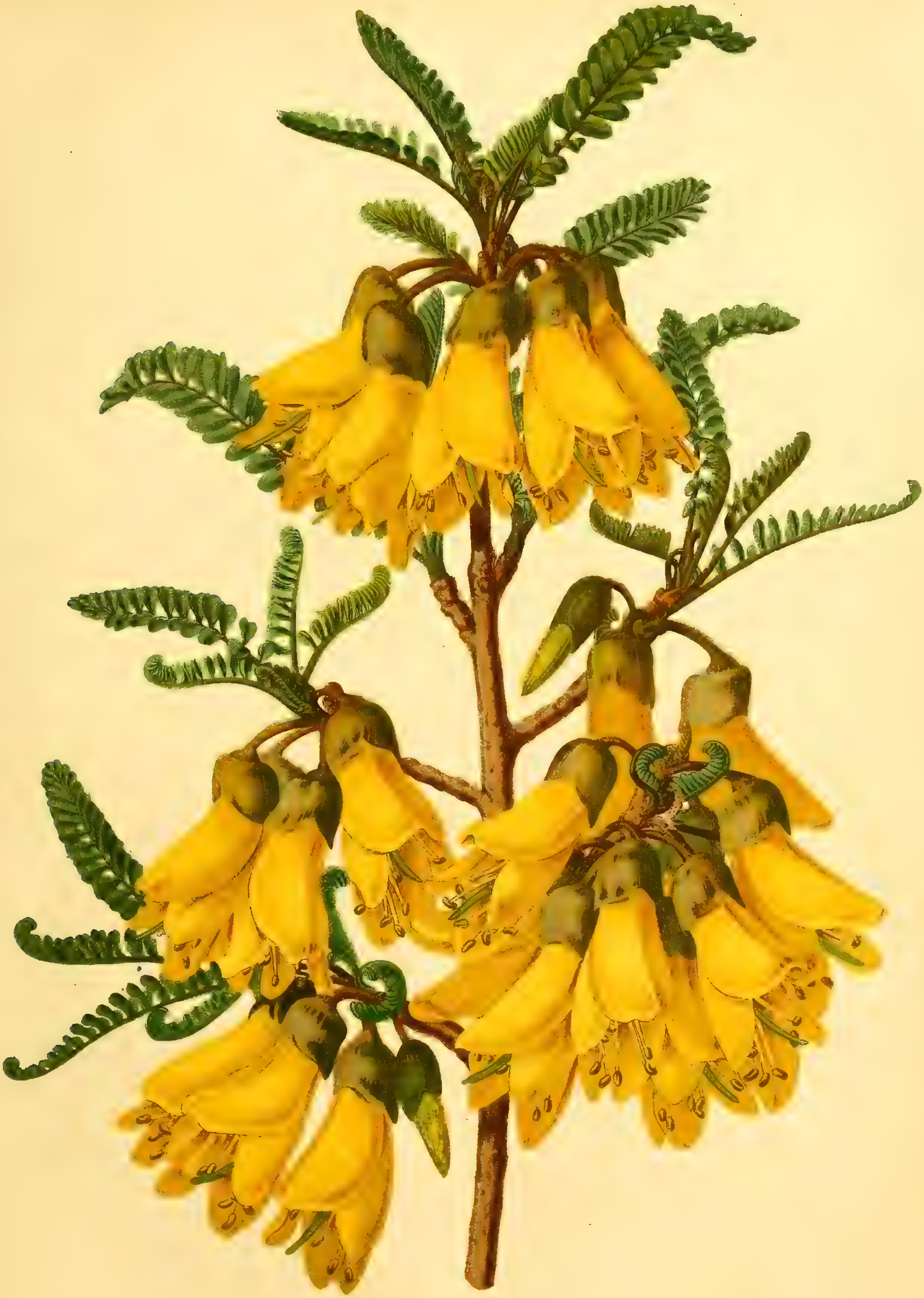
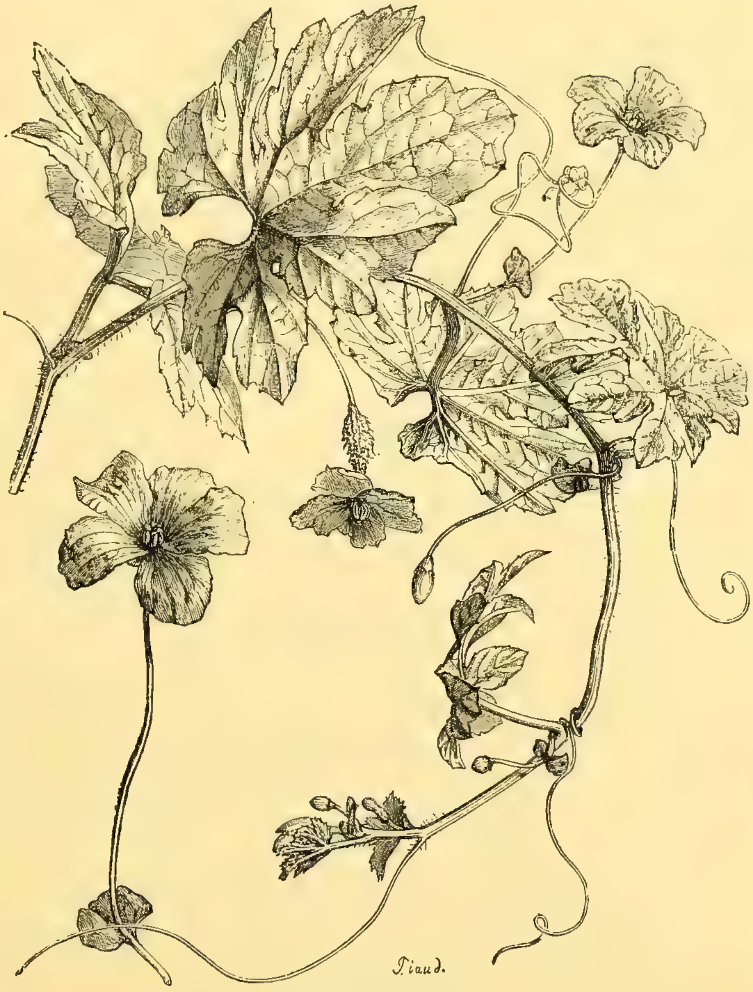


LARGE-FLOWERED EDWARDSIA (E. GRANDIFLORA)

MOMORDICA CHARANTIA.

The Momordicas are annual or perennial plants of a climbing, herbaceous habit, belonging to the natural Order Cucurbitaceæ; they are found in tropical and sub-tropical countries, and their flowers, which are large and showy, are either white or yellow, solitary, the male and female being borne either on the same or on different plants. The calyx and corolla are each in parts of five; the male flowers have three stamens seated on short filaments, the anthers on which are irregular or waved; in the female flowers the style is short, surmounted with three two-lobed stigmas. The fruits are fleshy, covered with warts or spines, and vary in size from 1 in. to 3 in. or 4 in. in length, the size to which those of the well-known species M. balsamina attain. M. Charantia is perhaps the most showy plant of all the Momordicas; it is an East Indian species, over which country it is widely spread, either naturally or by cultivation. The flowers are pale yellow, appearing from August to October; the fruit varies from about 1 in. to 2 in. long, thickly covered with tubercles or spines; as the fruits dry this spiny coating easily separates from the vascular, fibrous portion beneath, which is then very similar in appearance to a miniature Luffa or Towel Gourd; the seeds are oblong, tuberculated, and seated in an arillus, which, when fresh, is of a blood-red colour. Two distinct varieties of this plant are said to be known in India, between which, also, many intermediate forms occur. The principal difference in these varieties seems to be in the form of the fruits, some being longer and more oblong, while the others are smaller, more ovate, and more thickly tubercled or covered with prickles. The fruit, which is intensely bitter, is however quite wholesome, and is eaten in India by the natives, usually in their curries, after first being steeped in salt and water: the smaller varieties are mostly selected for this purpose. For medicinal purposes the juice of the leaves mixed with warm water is considered anthelmintic; the whole plant pulverised and applied externally is said to be efficacious in leprosy and malignant ulcers; and the plant beaten up and mixed with Cinnamon, Pepper, Rice, and the oil of Hydnocarpus inebrians, is applied as an ointment in cutaneous diseases. These uses, however, are entirely in native practice, the plant not being included in the Indian pharmacopæia. The fruits of most, if not all the species of Momordica, burst when ripe by an irregular dehiscence. The central or drooping flower in the woodcut represents the female, the young spiny fruit being also seen. The plant generally takes from two to three months to mature its fruit from the time when the seeds are sown, and then it keeps in bearing condition for some months. The seeds should be sown in spring in a light soil, and assisted to germinate with a little bottom-heat. When the young plants are large enough to handle, they may either be planted out and trained on a trellis, or grown on in pots. As it is a gross feeder, a rich soil suits it best, and the fruit is improved in size by an occasional application of liquid manure. J.



Momordica Charantia.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Late Melons planted out in frames—after these were cleared of bedding plants—should by this time have occupied all the space and set their fruit. Every assistance should be given to this late crop to facilitate growth, in order to ripen it before the cool weather sets in, as in ordinary manure frames they cannot be kept on growing with the same vigour as those in pits, where fire-heat can be applied. The plants ought to be well thinned out, cutting away all superabundant shoots without leaving them too thin, as when too much denuded of leaf-surface, the power of the roots becomes stagnated. Give enough water to help the fruit to swell freely, and try to keep up a genial bottom-heat by the use of linings, which may consist of fresh manure mixed with Grass-mowings, weeds, or vegetable refuse of any kind. Where there is a considerable extent of lawn kept mown, the Grass-mowings alone, mixed with the linings that have been applied previously, will generally suffice to keep up the requisite heat for one or two frames at this season. Continue syringing these late Melons in the afternoons at the time of shutting up, which should be early enough to enclose a good amount of sun-heat, giving air as soon as the sun comes upon the glass in the morning, and admitting as much during the day as will keep the plants in a stout, healthy condition. Melons that are now about ripening should be kept sufficiently dry without carrying this so far as to stagnate the roots, for although when the soil is too moist during the ripening stages of the fruits it both injures the flavour and often causes them to crack, still it is possible to keep them too dry.

Cucumbers in frames that have been bearing for some time, and that are required to keep on fruiting as late as possible, should now be well thinned out, cutting away the old exhausted shoots, retaining as many of the young growths that spring from the base of the plants as possible. These may with advantage be laid in so as to induce them to make roots by putting a few handfuls of soil over them at a short distance from where they spring; the young roots thus emitted will impart fresh vigour to the plants, and keep them bearing so long as there is sufficient atmospheric heat. Bottom-heat is not so necessary for Cucumbers during the summer season as it is for Melons, but as soon as the nights get cooler they will be benefited by a little, which can be secured by means of linings.

Herbaceous Plants.—A frame should now be got ready in which to put cuttings of any fine kinds of Antirrhinums, Pentstemons, Phloxes, and Hollyhocks, that it may be desirable to increase; 6 in. of fine sifted soil, to which has been added some well-decomposed leaf-mould and sand, should be put into the frame, inserting the smaller cuttings 1 in. or so apart. The Hollyhocks will succeed better if placed in small pots, as when struck such mode of growth will obviate the necessity of the check which they would receive in being potted after they were rooted: besides, they winter more satisfactorily in pots. In most cases these summer-struck cuttings of the above herbaceous plants, especially the Phloxes, will be found preferable to old stock; the additions of late years to the family of herbaceous Phloxes have been such as to place them in the very first rank of hardy plants, being easily grown and particularly adapted for cultivation by amateurs.

Bedding Plants.—If a sufficient number of Verbenas, Lobelias, Heliotropes, Ageratums, and similar bedding subjects were not potted on for stock when the bedding-out was completed, cuttings of all these should at once be inserted, eight or ten in 6-in. pots; these will strike, with the herbaceous plants above mentioned, in a cold frame placed under the influence of the sun, which will give sufficient warmth to effect the rooting process, using a thin shade to break the direct rays during the day; keep the soil continually moist, also the atmosphere, by not admitting air in such quantities as to cause the cuttings to flag, yet still giving enough to prevent their damping.

Border Carnations and Cloves should at once be layered; like most other plants the growth has been unusually late this year, but the layering should not be longer delayed, or there will not be sufficient time for them to root before autumn.

Gladioli planted late should have a neat stick put to each, to which they can be tied; it is always necessary to secure them in this way, but more especially such as bloom late through the autumn, and are under the influence of the stronger winds then prevalent.

Hydrangea japonica.—The Silver and Golden varieties of this elegant plant are worth growing, not only for their handsome leaves, but also for their flowers, which are produced just as freely and as effectively as by the green form of the plant.

Tritoma Uvaria, now throwing up its flowers, will likewise require support or it will get broken with the wind, except in the most sheltered situations. Give similar attention to Hollyhocks and Dahlias as they need it; if fine flowers of the latter be desired, the shoots and buds should be thinned out from this time as required. Earwigs are extremely destructive to the young buds; they may be trapped in various ways:—by pieces of paper crumpled up in the hand and thrust in betwixt the forks of the branches; small bundles of Broad Bean stalks cut in lengths of 5 in. or 6 in., and tied together (the insects shelter in the hollows of the stalks and may be shaken out and destroyed); and by the use of little pots inverted and filled with Moss, hung in the plants.

Kitchen Garden.—Strawberries recommended to be layered in small pots a short time back should immediately be transferred to those in which they are to fruit. Were it not that in most places runners were so unusually late this year this potting should have been performed a fortnight earlier, as there is now barely sufficient time for the plants to attain their wonted strength before the growing season is over, to assist which they must be stood in an open, sunny situation, and never allowed to become dry; 6-in. pots should be used with an inch of crocks at the bottom for drainage, and over them a few bits of turfy soil, on the top of which a little soot should be dusted to keep out worms; they should be potted in good, moderately heavy loam, rammed well into the pots so as to make it solid, not filling them too full, to allow sufficient room for watering. When potted they should be placed as close as possible in a square, not in a long thin row. Under the former arrangement the pots protect each other from the drying influence of the sun acting upon their outer surface, to which they are too much exposed when stood in a straight row. Later in the season they may be put in single file, which will assist the ripening of the crowns; a few inches of coal ashes under them will exclude worms. The late showery weather has been most favourable to runners rooting for permanent planting in the open ground; if this be immediately carried out, the moist condition of the soil will enable their getting established in a few weeks, and they will acquire enough strength to bear a good crop next year. In planting, press the soil quite firmly to their roots, and if the weather be bright, give a good soaking with water at the same time. Amateurs who have small gardens, and who require to make a new plantation of Strawberries, but who possibly may not yet have enough land cleared from other crops for the purpose, should at once prepare a small piece of ground as a nursery bed, wherein the runners can be planted out 5 in. or 6 in. apart, and from which they can, where there is room at disposal, be transferred to their permanent position. This will be found much better than allowing the runners to remain in the ground where produced until the place where they are to be grown is at liberty, as under the latter condition they will not produce so much fruit next year. The following are a few of the best varieties of Strawberries suitable for amateurs to grow:—Keen's Seedling, the best for an early crop. Black Prince is a little earlier, but the fruit is so small that I should not advise its being used in gardens where the space is limited. Sir Joseph Paxton—a very free grower, bears abundantly; fruit of good quality. President (Green) will succeed Keen's Seedling; it is a large, handsome sort, an immense cropper, of good flavour, doing well in most soils and situations; if confined to a single variety, this is the one I should select. Sir Charles Napier will follow; it grows well in most soils, and produces an enormous quantity of fruit of good quality. British Queen is unsurpassable in both the appearance and flavour of its fruit; but it requires ground naturally well adapted for Strawberry culture, or if of a light nature, to receive a liberal addition of marl or clay. Eleanor, a good large fruit, comes in very late. Amongst the large number of Strawberries that find favour more or less, amateurs are often perplexed what to grow, but they may rely on the above half-dozen kinds giving satisfaction and representing all the properties required in this fruit. Established beds of Strawberries that have discontinued bearing should have all the runners cleared away, as these, if allowed to remain, do not improve the fruiting capabilities of the plants for another year; at the same time the ground should be well hoed, so as to kill all weeds as they appear.

Cauliflowers, for wintering in frames and under hand-lights should in the north of the kingdom be immediately sown; in the southern parts it will be better deferred till a week later. If a small quantity of the Early London and the late Asiatic be sown they will give a succession. I should recommend these seeds being dressed with red lead in the way that has previously being described, which will effectually prevent their molestation by birds; it is quite necessary to do this, for should the seed now put in get destroyed, by the time the failure is discovered it will be too late to sow for the requisite early crop in the spring.

Endive and Lettuce.—A little more Endive should be sown; as also Tom Thumb Lettuce, to come in for use late in the autumn. I should likewise suggest that a little Hardy Green Lettuce be put in, especially in localities subject to sharp frosts in autumn, as I have always found this variety stand when others have failed.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

August 20.—Sowing Early White Naples, Giant White, Tripoli, and Giant Rocca Onions for spring and summer use. Putting in Santolina cuttings under hand-lights in sharp sandy soil in a shady situation. Earthing up Celery and Cardoons whilst the plants are perfectly dry. Putting a little fresh soil on the roots of newly-planted Cucumbers and Melons. Salting gravel walks in order to kill weeds. Watering all newly-planted trees and shrubs that are likely to suffer from drought; also Celery, Carrots, Turnips, and Radishes.

Aug. 21.—Planting Antirrhinums and Sweet Williams; also Lettuce and Endive in good rich soil. Potting Cinerarias: also small Dracænas for table decoration. Pruning and nailing Rose trees on walls. Heavily manuring and trenching a large piece of ground previously occupied by Raspberries in which to plant Strawberries. Removing all overgrown heads from Globe Artichokes to prevent them weakening the plants. Watering newly-made Asparagus beds with liquid manure; also Pines, Celery, Scarlet Runners, Beans, Lettuce, and Endive.

Aug. 22.—Sowing Walcheren, Early London, Large Asiatic, and Autumn Giant Cauliflowers on well-prepared borders for spring and summer use. Taking up sorts of Potatoes in the following order:—Snowflake, Porter's Excelsior, Ashtop Fluke, Scilly Red, King of the Potatoes, Hundredfold Fluke, Yorkshire Hero, Breadfruit, Lady Paget, Perfection Kidney, Model, Rector of Woodstock, Fenn's Bountiful, Fenn's Early Market, Magnum Bonum, Blanchard, Favourite, and Red-skin Flourball. Watering Vine borders, Celery, Tomatoes, Cauliflowers, and Peas.

Aug. 23.—Sowing Red and White Turnip Radishes on moist soil. Putting in a batch of Pelargonium cuttings for border use. Sorting over Potatoes, and placing those intended for seed in shallow boxes. Making new gravel walks. Cleaning and weeding shrubbery and Ivy banks in the pleasure ground. Watering Pines with soot water; also the Peach-house border, Lettuce, Endive, and Carrots.

Aug. 24.—Cleaning out Melon-pit, turning and well watering the soil, and planting it with Osborn's Forcing French Beans. Pruning pyramid Apple and Pear trees. Nailing and tying Peach trees. Earthing up Celery and Leeks. Gathering Plums, Jargonelle Pears, and a few Tomatoes. Watering Peas, Celery, and young Cabbage plants.

Aug. 25.—Potting Cyclamens. Planting Lettuce and Endive. Looking over Vines, and taking off laterals and any decayed berries. Stopping shoots of Melons and Cucumbers. Hoeing surface soil between all growing crops. Cleaning and weeding gravel walks.

SEASONABLE NOTES.

Fruits Ripening in Orchard Houses.—Some people have an idea that stone fruits ripened on the open wall are better flavoured than those ripened in cool houses. Where such is the case it should be taken, I think, as a sign that something has been wrong in the management of the house. The chief sources of colour and flavour in stone fruits are light and air. Fruit trees that are growing in a dark, crowded, ill-ventilated house, and that during the last week of approaching maturity receive the same quantity of water that had been given previously, are not likely to produce fruit worth eating. But if the fruit be exposed to strong light, abundant ventilation insured, and less water given during the last ten days or so of their ripening, good-flavoured fruit will generally be obtained. Of course, I am assuming that the trees are healthy, the foliage in good condition, free from red spider and other insect-pests, and only allowed to carry a reasonable crop.

Fruit for Tarts.—Owing to the great dearth of stone fruits, autumn-bearing Raspberries will this season pay for extra attention in the way of mulching, thinning out the weakly growths, and tying up the fruiting canes, if necessary to keep them off the ground, or to improve the flavour of the berries by a freer exposure. If dry weather continue, a good soaking of water will assist them. Red and White Currants on north walls will keep in a good condition through the autumn if well preserved from birds and wasps: Haythorn's hexagon netting will do all this effectually, and at the same time admit a free circulation of air. The common Blackberry rarely fails to produce a good crop, and no doubt this year its fruit will be eagerly sought after. What has become of the improved varieties of Blackberries that were introduced from America some years ago? Will any of your readers who may happen to grow them kindly give us the result of their experience in regard to them.

Tomatoes in Pots Under Glass.—I think I have never known Tomatoes in the open air so late as they are this year, but fortunately we have been able to gather plenty from pots standing on the front shelf in one of the houses, and trained up near the glass. Wherever there is shelf room in a warm house Tomatoes may be had in abundance without much trouble.

Late Peas in Pots.—Where very late Peas are required, some of the dwarf early kinds, such as Blue Peter, Gem, and Unique, might be sown now, not too thickly, in 8-in. pots. There is an advantage in growing the last crop in pots, because in the early period of their development they can be grown on the north side of a fence surrounded by a cool, genial atmosphere, and, when the sun loses power and the heat is moderate, they can be moved to a warmer position, or be placed, if necessary, under glass, to set their blossoms and fill out their pods.

Late French Beans.—Plant any of the small early kinds in a frame or pit—one from which early Melons have been cut will do. Fork up the soil, and pick out the roots, and give a good watering if the soil be dry a few hours before planting the Beans; the lights may remain off till the approach of cold weather. A few may also yet be planted on a warm south border, if a frame and lights can be placed over them before frost comes. In the event of a mild autumn they will come in useful.

Cauliflowers.—From the 18th of this month to the 1st of Sept., according to situation and other circumstances, will be a suitable time to sow the main crop of Cauliflowers, but if they are to be wintered under glass, the last week in this month will be in most places quite early enough. I always sow with the early kinds a few seeds of Veitch's Autumn Giant, it is so valuable for cutting now and onwards, and it produces a close firm heart in the hottest weather, when frequently the Walcheren is useless. This year has been an exceptionally good year for Cauliflowers: they are both fine and free from insects.

Treatment of Old Cabbage Beds.—In very many gardens the old Cabbage stems are allowed to remain for the sake of the second crop of little hearts they produce in autumn. The soil amongst them should now be well scarified, and if a top-dressing of manure of some kind can be given the produce will be equal to early spring Cabbages in flavour and tenderness. Where no attention is given to them they are tough and leathery, unless the land be deep and rich. E. Hobday.

AUTUMN AND WINTER CUCUMBERS.

For late autumn and winter bearing, sow now one or more of the following varieties of Cucumbers, viz., Telegraph, Masters' Prolific, and Munro's Duke of Edinburgh. The last-named is a great bearer, but the Telegraph produces the longest and handsomest fruit. Plant each seed in a 3-in. pot in a compost of rich turfy loam and leaf-mould in equal proportions, and plunge the pots in some close pit or frame near the glass. An old, nearly-spent hotbed turned over and freshened up will be a suitable place, as it is not necessary to hurry them, but it is important to have strong vigorous plants grown without any kind of check. It is well also to raise a few more plants than will be required, as in that case one has the chance of selecting strong plants only, and in any given number raised there will always be a small percentage of weakly ones. In growing early and late Cucumbers, there should be a thorough command over the heating power, especially the bottom-heat, and as regards the latter 75° should not be much exceeded if steady and continuous bearing be desired. Where the autumn and winter supply has to be obtained from one house, leave three plants—one in the middle and one at either end—altogether uncropped through the autumn by pinching off all fruits as soon as they show themselves, and keeping the growth pinched back moderately close at the same time. The advantages of this plan will be seen when about Christmas the exhausted plants are pulled up, giving those left room for development. Cucumbers do not require a great depth of soil in which to start—from 9 in. to 12 in. will be ample; but what they do require is very frequent top-dressing, at least once a week. They require a good deal of moisture both at the root and in the atmosphere, and frequent top-dressing not only supplies fresh food to the roots in small quantities as required, but it freshens up, and by preventing stagnation, purifies the atmosphere of the house at a time of year when much ventilation cannot be given without too great a sacrifice of heat. Where good loam can be had, full of fibre and free from wireworms, it should always form the main bulk of the compost used, adding soot or any other stimulating substance to enrich it where necessary, bearing in mind that although light, rich soils may produce rapid growth at first, yet when the pinch comes the plants often fail, while others grown more slowly in heavier soil will have continued bearing freely, and have furnished fruit in a satisfactory manner.—E. Hobday.

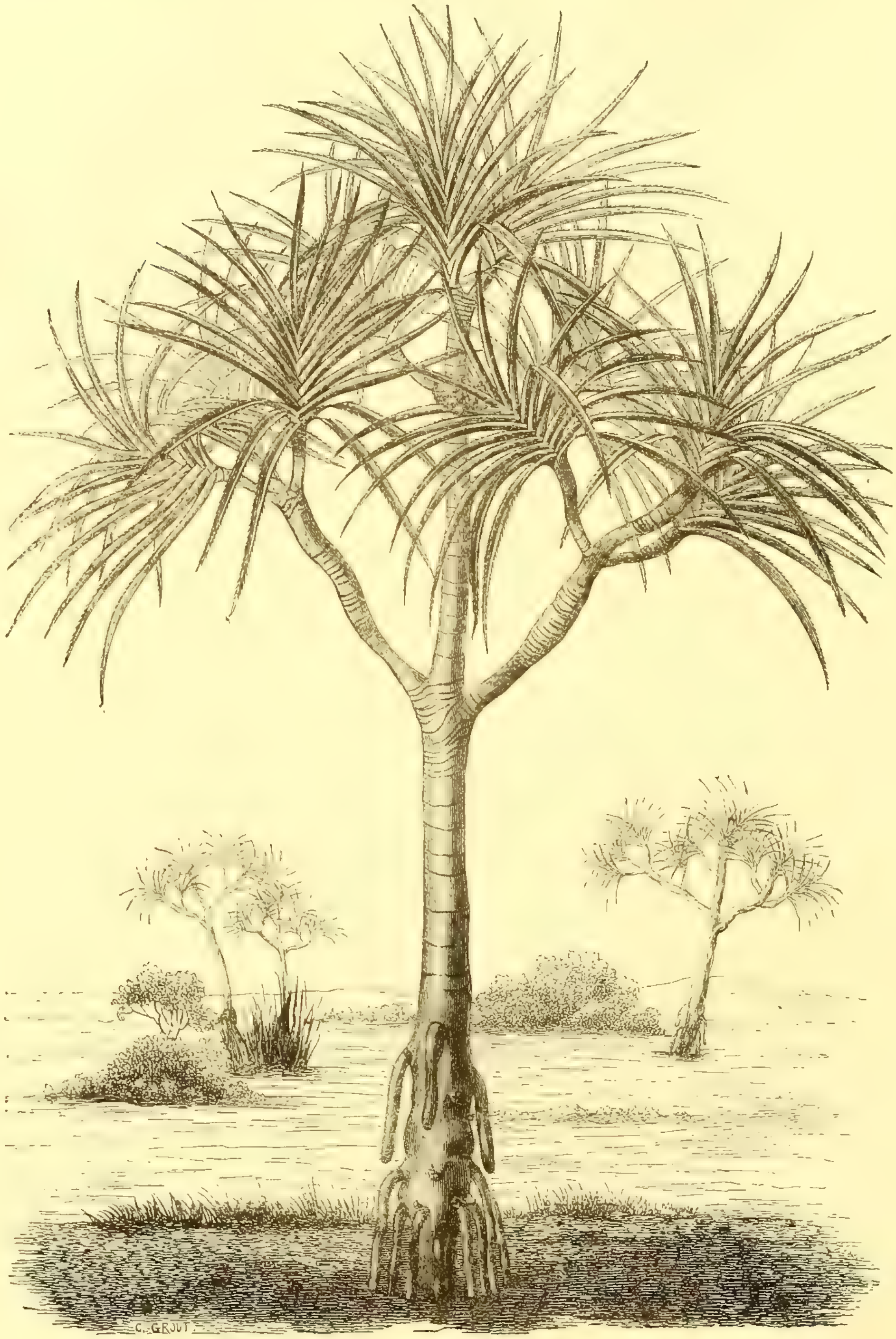
NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Mushrooms and Saltpetre.—At a recent meeting of the Horticultural Society of France an enormous Mushroom was exhibited by M. Courcier, who took occasion to point out that equally remarkable results can often be obtained by watering the beds on which these fungi are grown with a solution of nitrate of potass. Under this treatment a bed usually producing Mushrooms of but very small size will frequently bear specimens upwards of 20 centimètres in diameter in an incredibly short space of time. Occasionally they attain really gigantic proportions, and Mushrooms weighing as much as 7 lb. each have been grown in ordinary beds by the aid of such solutions. Nor is this increase in size attended with any loss of quality, the monstrous specimens thus obtained being equally palatable with those of more moderate dimensions. The simplicity of the plan is not the least of its recommendations, since any Mushroom grower possessed of a handful of saltpetre can test it for himself without either trouble or expense.

Too Soon.—The Rector of Hitcham suggests that coloured illustrations of the Colorado beetle should be distributed among schools, and then all village children might look about for it for a small pecuniary reward. Where that reward would tempt the village children to search for the beetle goodness only knows; but if they were let loose on the Potatoes; there would be a chance of the distinguished visitor being starved out.—"Fun."

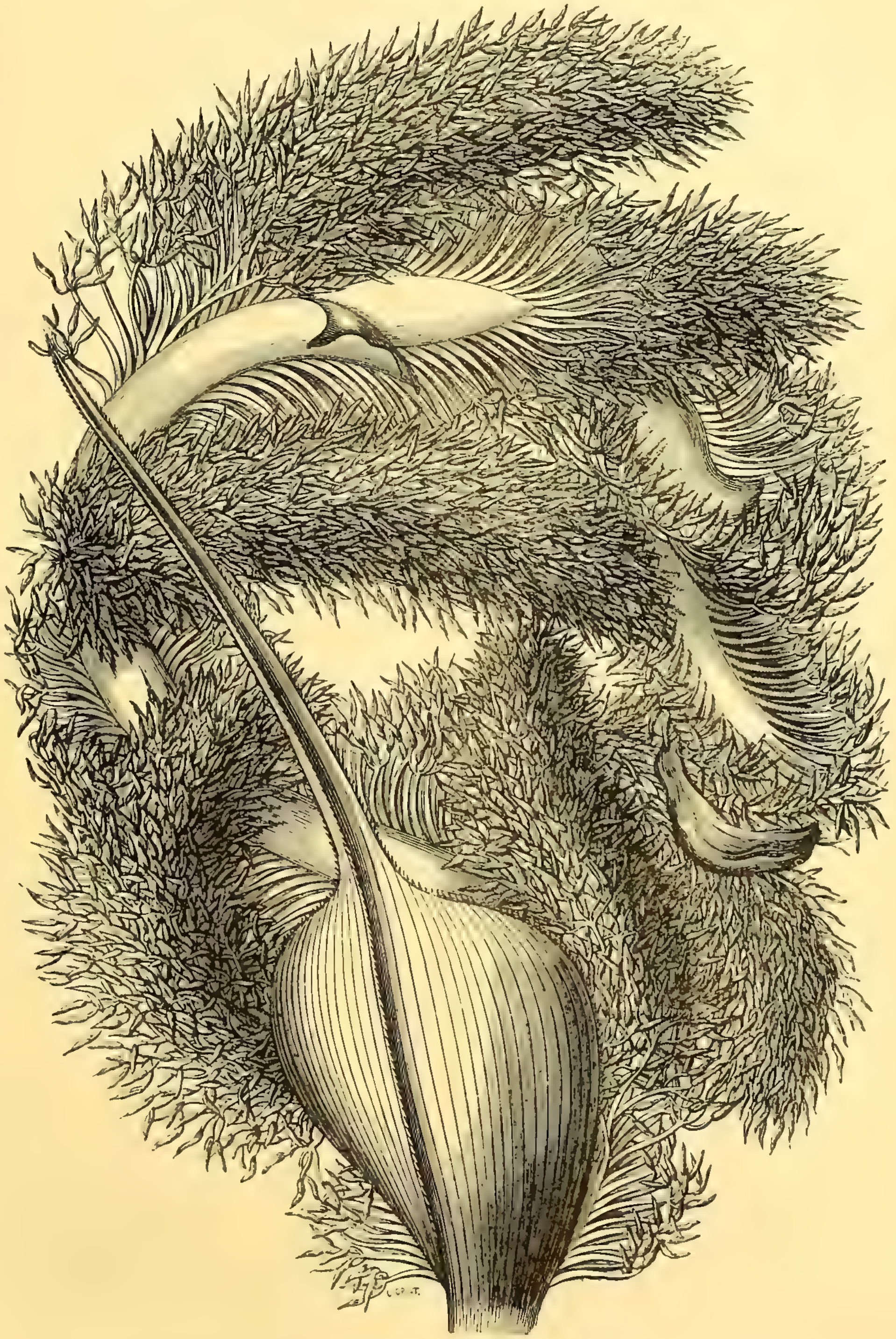
THE SCREW PINES.

The accompanying woodcut represents a typical member of the genus Pandanus, which includes about seventy species, all confined to the tropics of the Old World. The present species, as defined by Rumphius, has a wide distribution, and its names are as numerous as its uses. This, P. odoratissimus, and P. utilis are perhaps the most important. The name Screw Pine has been generally applied to all the species, on account of their resemblance when young to the Pine-apple, and because of their long, narrow, spiny, imbricated leaves being arranged in three spiral rows at the extremity of the branches. The three above mentioned and some other species sometimes attain a height of 30 ft., assume a candelabra-like form, and impart a most peculiar aspect to the coasts, &c., on



Pandanus sylvestris.

which they grow. To support the tree, thick, adventitious roots are freely given off from the branches and stems, and rapidly elongate until they reach the ground. These afford perhaps the best illustration of the pileorhiza (a sort of cap or hood of loose tissue which sheathes the growing points of the roots of some plants). The flowers have no perianth or flower envelope of any kind, are diœcious, and enclosed in spathes. The male has numerous stamens, the filaments of which are often connate, as shown in our drawing. The fruits vary considerably, ranging in size from that of a small orange to large globular heads more than 1 ft. in diameter. In the tertiary series in our latitude, fossil Pandanus fruits are by no means uncommon, thus showing that a torrid climate prevailed in Europe during the tertiary period. The flowers and flower-



Male flower of Pandanus sylvestris.

spathes of our present plant emit a delightful odour, much weaker, however, than that of P. odoratissimus, which we are assured is the richest and most powerful of all perfumes. If a panicle of the latter plant be left in a room, it will scent it for months. Perhaps the largest specimen in Europe of this species may be seen in the Palm-house at Kew. In the Museum No. 2 also there is a good collection of articles illustrating the uses to which different parts of the Pandanus plant may be applied, viz., mats, hammocks, beautiful baskets and boxes from the leaves, and cords, &c., from the fibre. A considerable trade is done in the flowers, the best (from Java) fetching a high price as an article for the toilet. This and other Pandanads when young are most graceful plants as single specimens in vases, owing to the recurved form of their leaves and the light and elegant appearance which they present, especially when kept to single stems. As regards culture, they should be grown in well-drained pots in a compost consisting of loam, peat, and silver sand; they require the temperature of a stove, and the variegated kinds should have plenty of light in order to bring out their colours.

Q.

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 139).

Thyme.

(1) *Oberon.* I know a bank where the wild Thyme grows.
Midsummer Night's Dream, act ii., sc. 1.

(2) *Iago.* We will plant Nettles or sow Lettuce, set Hyssop and weed up Thyme.
Othello, act i., sc. 3. (See Hyssop).

It is one of the most curious of the curiosities of English plant names that the Wild Thyme—a plant so common and so widely distributed, and that makes itself so easily known by its fine aromatic, pungent scent, that it is almost impossible to pass it by without notice—has yet no English name, and seems never to have had one. Thyme is the anglicised form of the Greek and Latin *Thymum,* which name it probably got from its use for incense in sacrifices, while its other name of *serpyllum* pointed out its creeping habit. I do not know when the word Thyme was first introduced into the English language, for it is another curious point connected with the name, that *thymum* does not occur in the old English vocabularies. We have in Ælfric's Vocabulary, "Pollegia, hyl-wyrt," which may perhaps be the Thyme, though it is generally supposed to be the Pennyroyal; we have in a vocabulary of the thirteenth century, "Epitime, epithimum, fordboh," which also may be the Wild Thyme; we have in a vocabulary of the fifteenth century, "Hoc sirpillum, A^{ce} petergrys;" and in a pictorial vocabulary of the same date, "Hoc cirpillum, A^{ce} a pellek" (which word is probably a misprint, for in the "Promptorium Parvulorum," c. 1440, it is "Peletyr, herbe, *serpillum, piretrum*"), both of which are almost certainly the Wild Thyme; while in an Anglo-Saxon vocabulary of the tenth or eleventh century we have "serpulum, crop-leac," *i.e.*, the Onion, which must certainly be a mistake of the compiler. So that not even in its Latin form does the name occur, except in the "Promptorium Parvulorum," where it is "Tyme, herbe, *Tima, Timum*—Tyme, floure, *Timus.* And it is thus a puzzle how it can have got naturalized among us, for in Shakespeare's time it was completely naturalised. I have already quoted Lord Bacon's account of it under Burnet, but I must quote it again here:—"Those flowers which perfume the air most delightfully, not passed by as the rest, but being trodden upon and crushed, are three, that is Burnet, Wild Thyme, and Watermints; therefore, you are to set whole alleys of them, to have the pleasure when you walk or tread;" and again in his pleasant description of the heath or wild garden, which he would have in every "prince-like garden," and "framed as much as may be to a natural wildness," he says, "I like also little heaps, in the nature of mole-hills (such as are in wild heaths) to be set some with Wild Thyme, some with Pinks, some with Germander." Yet the name may have been used sometimes as a general name for any wild, strong-scented plant. It can only be in this sense that Milton used it.

> Thee, shepherd! thee the woods and desert caves,
> With Wild Thyme and the gadding Vine o'ergrown,
> And all their echoes mourn.
>
> *Lycidas.*

for certainly a desert cave is almost the last place in which we should look for the true Wild Thyme.

It is as a bee-plant especially that the Thyme has always been celebrated. Spenser speaks of it as "the bees-alluring Tyme," and Ovid says of it, speaking of Chloris or Flora—

> Mella meum manus; volucres ego mello daturos
> Ad violam et cytisos, et thyma cana voco.
>
> *Fasti,* v.

so that the Thyme became proverbial as the symbol of sweetness. It was the highest compliment that the shepherd could pay to his mistress—

> Nerine Galatea, thymo mihi dulcior Hyblæ.
>
> *Virgil,* Ecl. vii.

and it was because of its wild Thyme that Mount Hymettus became so celebrated for its honey—"Mella thymi redolentia flore" (Ovid). "Tyme, for the time it lasteth, yeeldeth most and best honni, and therefore in old time was accounted chief (Thymus aptissimus ad mellificum—Pastus gratissimus apibus Thymum est. ("Plinii His. Nat").

> Dum thymo pascentur apes, dum rore cicadæ.
>
> *Virgil,* Georg.

Hymettus in Greece and Hybla in Sicily were so famous for Bees and Honni, because there grew such store of Tyme; propter hoc Siculum mel fert palmam, quod ibi thymum bonum et frequens est" (Varro).—"The Feminine Monarchie, 1634."

The wild Thyme can scarcely be considered a garden plant, except in its variegated and golden varieties, which are very handsome, but if it should ever come naturally in the turf, it should be welcomed and cherished for its sweet scent. The garden Thyme (T. vulgaris) must of course be in every herb garden; and there are a few species which make good plants for the rockwork, such as T. lanceolatus from Greece, a very low-growing shrub, with narrow, pointed leaves; T. carnosus, which makes a pretty little shrub; and others; while the Corsican Thyme (Mentha Requieni) is perhaps the lowest and closest-growing of all herbs, making a dark-green covering to the soil, and having a very strong scent, though more resembling Peppermint than Thyme.

Toadstools.

Ajax. Toadstool, learn me the proclamation.
Troilus and Cressida, act ii., sc. 1.

I quoted this passage under Mushrooms, in order to speak of the fungology of Shakespeare generally; but I quote it again to give myself the opportunity of supplying another passage which I had then overlooked, but which clearly refers to fairy rings—

> *Quickly.* And nightly meadow fairies, look you sing,
> Like to the Garter's compass, in a ring,
> The expressure that it bears green let it be,
> More fertile-fresh than all the field to see.
>
> *Merry Wives of Windsor,* act v., sc. 5.

There can be no doubt that the reference is to fairy rings. (See Mushrooms).

Turnips.

Anne. Alas! I had rather be set quick in the earth and bowled to death with Turnips.
Merry Wives of Windsor, act iii., sc. 4.

The Turnips of Shakespeare's time were like ours, and probably as good, though their cultivation seems to have been chiefly confined to gardens. It is not very certain whether the cultivated Turnip is the wild Turnip improved in England by cultivation, or whether we are indebted for it to the Romans, and that the wild one is only the degenerate form of the cultivated plant; for though the wild Turnip is admitted into the English flora, yet its right to the admission is very doubtful. But if we did not get the vegetable from the Romans we got its name. The old name for it was *næp, nep,* or *neps,* which was only the English form of the Latin *napus,* while Turnip is the corruption of *terræ napus,* but when the first syllable was first added I do not know. There is a curious perversion in the name, for our Turnip is botanically Brassica Rapa, while the Rape is Brassica Napus, so that the English and Latin have changed places, the Napus becoming a Rape and the Rapa a Nep.

The present large field cultivation of Turnips is of comparatively a modern date, though the field Turnips and garden Turnips are only varieties of the same species, while there are also many varieties both of the field and garden Turnips. "One field proclaims the Scotch variety, while the bluer cast tells its hardy Swedish origin; the tankard proclaims a deep soil, and the lover of boiled mutton, rejoicing, sees the yellower tint of the Dutch or Stone Turnip, which he desires to meet with again in the market" (Phillips). It is not very easy to speak of the moral qualities of Turnips, or to make them the symbols of much virtue, yet Gwillim did so:—"He beareth sable, a Turnip proper, a chief or gutte de Larmes. This is a wholesome root, and yieldeth great relief to the poor, and prospereth best in a hot sandy ground, and may signifie a person of good disposition, whose vertuous demeanour flourisheth most prosperously, even in that soil, where the searching heat of envy most aboundeth. This differeth much in nature from that whereof it is said, 'And that there should not be among you any root that bringeth forth gall and wormwood'" (Gwillim's "Heraldry," sec. iii., c. 11).

Vetches.

Iris. Ceres, thou bounteous lady, thy rich leas
Of Wheat, Rye, Barley, Vetches, Oats, and Peas.
Tempest, act iv., sc. 1.

The cultivated Vetch (Vicia sativa) is probably not a British plant, and it is not very certain to what country it rightly belongs; but it was very probably introduced into England by the Romans as an excellent and easily-grown fodder-plant. But there are several Vetches that are true British plants, and they are among the most beautiful ornaments of our lanes and hedges. Two especially deserve to take a place in the garden for their beauty; but they require watching, or they will scramble into parts where their presence is not desirable: these are V. Cracca and V. sylvatica. V. Cracca has a very bright pure blue flower, and may be allowed to scramble over low bushes; V. sylvatica is a tall climber, and may be seen in copses and high hedges climbing to the tops of the Hazels and other tall bushes. It is one of the most graceful of our British plants, and perhaps quite the most graceful of our climbers; it bears an abundance of flowers, which are pure white streaked and spotted with pale blue; it is not a very common plant, but I have often seen it in Gloucestershire and Somersetshire, and wherever it is found it is generally in abundance.

The other name for the Vetch is Tares, which is, no doubt, an old English word which has never been satisfactorily explained. The word has an interest from its biblical associations, though modern scholars decide that the Zizania is wrongly translated Tares, and that it is rather a bastard Wheat or Darnel. H. N. Ellacombe.

(To be continued).

SEED SAVING *v.* VEGETABLE GROWING.

A very popular error in connection with vegetable culture is that of saving seed from growing crops that are intended to supply the wants of the household, under the impression that such a proceeding is economical; a greater fallacy could scarcely be indulged in, more especially with regard to crops that continue to furnish successional gatherings for any length of time, as, for instance, Vegetable Marrows, Cucumbers, Kidney and Runner Beans, etc. It is by no means a rare occurrence to find some of the earliest and finest produce left for seed, whereby the fertility of the plants is brought to an abrupt termination, as the formation of seed is far more exhaustive in its effects than an unlimited number of blossoms or pods up to the period of the maturity of the seed. In the case of Beans of the Kidney or Runner sections, it is the pod that furnishes the edible portion: also with Vegetable Marrows and Cucumbers, the seed-vessel or covering is at its highest state of excellence as food before the seed commences to draw on the resources of the plant; and in proportion as they are more or less carefully removed will be the duration of period in which successional gatherings will be produced. I always gather all such crops at regular intervals, according to the season and the rapidity with which they attain development, and should any of the produce become too old, from having escaped observation at previous gatherings, it is pulled off and thrown away, as a very small quantity of seed-pods is sufficient to arrest the successional development of the crop.

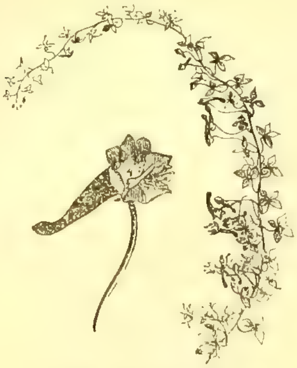
When it is desirable to save seed of any select stock, it is by far the best plan to set a row (or a portion of one, according to the quantity required) specially apart for seed, and not gather any produce from them, drawing out any plants that do not appear true. By this means one may greatly prolong the season of production, in comparison with which the trifling cost of seed is little or nothing. If any one be sceptical of the power of seed-pods in arresting the production of successive crops, let them select two rows of Sweet Peas, and gather the blossoms of one row as fast as fully expanded, and allow the others to mature their seed; the latter will cease blooming and be thoroughly exhausted and dried up by the time the seed-pods are ripe, while the latter will continue growing and producing fresh blooms until checked by frost. It is of course not practicable to pursue the same plan with Peas grown for the table, and the only way to secure a continuous supply of Peas is by successional sowings. But Scarlet Runners will continue bearing the whole season, equally as well as Vegetable Marrows or Cucumbers, if well attended to in the matter of moisture at the roots, and above all, in preventing any portion of the produce from going to seed. The saving of the seed of vegetable crops is also an important matter as regards future crops, for a careful selection will eventually produce a good strain, as will indiscriminate seed saving eventually deteriorate the most select stock in existence. From careful observation, I should say that seed saving and vegetable growing are, as a rule, both more satisfactory and remunerative when carried out as totally distinct operations.

Henham. James Groom.

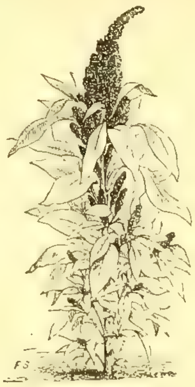
Trees and Electricity.—We gave an account the other day of some of M. de Moncel's observations on the electric conductivity of trees. In a further note to the French Academy he gives a table of the comparative resistances of a large number of trees. The method of experiment was to apply two platinum electrodes of square surface, one at the upper part and the other at the base of the tree; they were 6·44m. apart, and the lower electrode placed slightly above the ground. Such an arrangement with a galvanometer itself gives a current from above downwards through the galvanometer; and this had to be allowed for before the battery (of three Daniell elements) was connected. The table shows that soft woods of spongy tissue and vigorous vegetation, such as Elm, Chestnut, Lime, Poplar, &c., are the best conductors, while the hard woods of slow vegetation are the most resistant. Birch seems to form an exception. The order of conductivity is pretty much the same as that of the same woods when dry and exposed to moisture.—"English Mechanic."

The Reservoirs Bill.—This will enable any landowner, however limited his interest, to collect water on his estate from any pure source at his command, and having entered into a contract to supply it to any sanitary authority within reach, he can borrow the money required for the necessary works, and, with the approval of the Enclosure Commissioners, charge his estate with the cost on two conditions—first, that the amount is repaid by instalments extending over a limited period of years; and second, that the income to be derived from the water shall be sufficient to satisfy the Commissioners that the reversionary interests—*i.e.*, the property—will be benefited by the transaction. In many localities this measure will be found of great advantage, for the reservoirs and works contemplated by it will not be limited in their use to the storage of surface or surplus waters, but will be found available for the collection of spring and subterranean waters where they are only to be favourably obtained on private estates. The sanction given by the Legislature to landowners to become suppliers of water, and to local sanitary authorities to become customers, with a legalized power to contract and pay for it, will remove many objections and difficulties which now stand in the way of water supply to small communities.

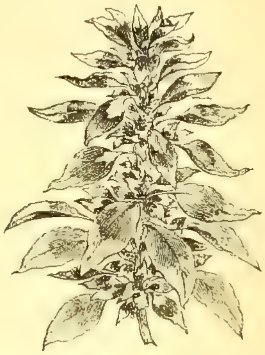
A Natural Bridge, said to be far more wonderful than that in Virginia, is reported to have been recently discovered in Elliot County, Kentucky. It is of solid stone, in form a magnificent arch, 162 ft. long, and 15 ft. wide at the top, the river, the Little Chaney, rolling 100 ft. below. Fifty yards above the bridge is a waterfall, 60 ft. high, and the view from the bridge is said to be extremely beautiful.—"Builder."



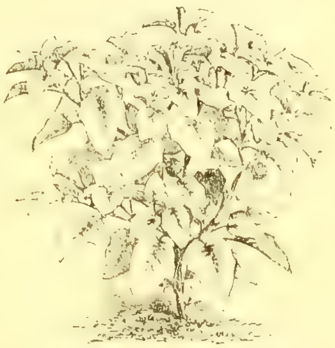
Five-leaved Indian Cress
(Tropæolum pentaphyllum).



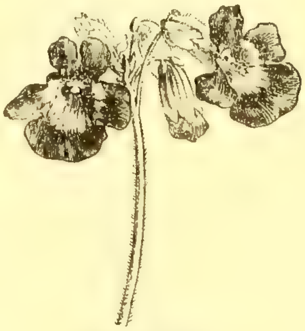
Showy Prince's Feather
(Amarantus speciosus).



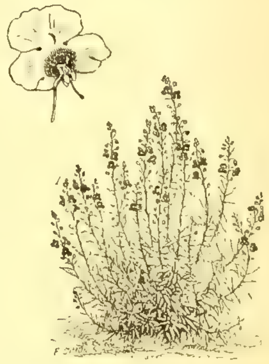
Amarantus tricolor.



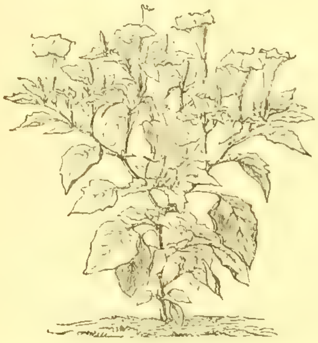
Downy Thornapple (Datura Metel).



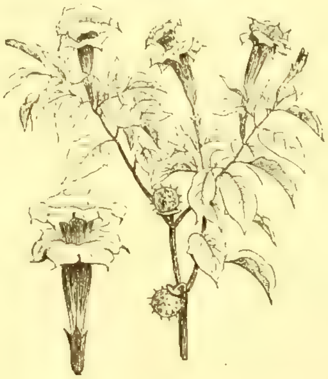
Martynia fragrans.



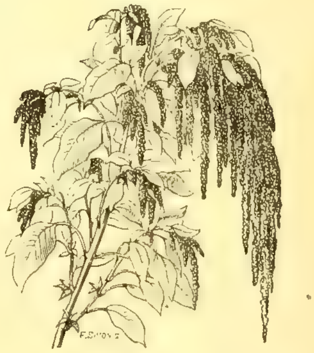
Alonsoa incisifolia.



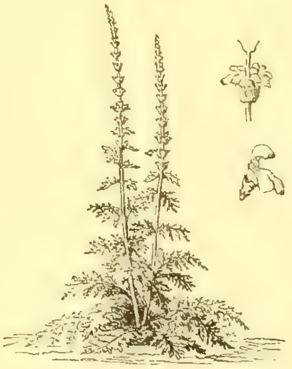
White-flowered Thornapple (Datura meteloides).



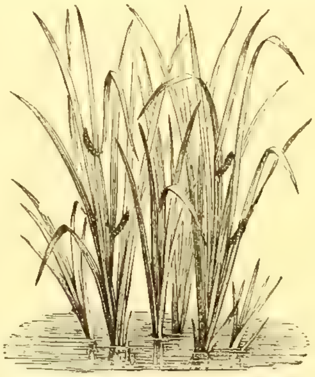
Purple Thornapple (Datura fastuosa).



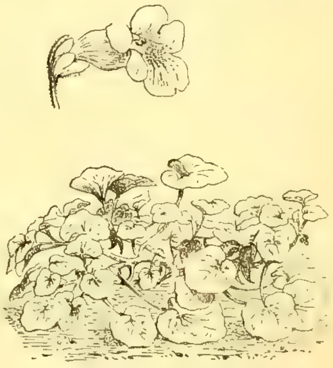
Love-lies-bleeding (Amarantus caudatus).



Eremostachys laciniata.



Common Sweet Flag (Acorus Calamus).



Martynia proboscidea.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

HARDY FLOWERS OF THE WEEK.

The best plant in our list this week is Senecio pulcher, figured in The Garden of June 17 of last year. Although it comes from Buenos Ayres, it has proved quite hardy with us during the past three years in the open border. The foliage is large, of great substance, and deep green in colour; the flower-stems stout, erect, and branching from 2 ft. to 3 ft. in height, bearing numbers of purplish-crimson flowers, measuring from 2 in. to 3 in. across. Echinacea angustifolia and purpurea are also useful plants, with stout, erect stems, from 3 ft. to 4 ft. in height, bearing large purple flowers. Pentstemon barbatus Torreyi, bearing pyramidal spikes of crimson flowers 4 ft. in height, is a striking plant; and so are the various sorts of Tritoma, especially T. grandiflora and T. glaucescens, the noble spikes of scarlet and yellow flowers of which stand out in bold relief from among their associates. The little T. Macowani, figured the other day in The Garden, is also now in flower, and is a perfect gem. Two members of the Spiderwort family, Commelina cœlestis and C. cœlestis alba are both well worth growing; the one is a lively gentian blue, the other white, and they continue in flower until very late in the season; in cold, heavy soils, they should be taken up and stored away like Dahlias. Acanthus latifolius, now in flower, is an imposing object, its flower-spikes reaching a height of from 4 ft. to 6 ft. Digitalis ferruginea is now in blossom; but it is not so showy as D. grandiflora, which is now also covered with spikes of soft yellow flowers. Bocconia cordata, with handsome foliage, surmounted by numerous feathery panicles, arrests the attention of all who see it: although vigorous in growth, and apt to encroach upon its neighbours, yet for the wild garden or shrubbery border few plants equal it. To these may be added the white-flowered Polygonum amplexicaule, the double perennial Sunflower (Helianthus multiflorus fl.-pl.), Echinops of various sorts with globular heads of Thistle-like blue and white flowers, Monardas, and several of the Aconitums or Monk's-hoods, amongst which A. Anthora deserves special mention; it grows from 2 ft. to 2½ ft. in height, forming a pyramid of showy yellowish flowers; Leucanthemum alpinum, with numerous large, white, Daisy-like flowers, is also very conspicuous. It is closely allied to the Chrysanthemums, the best of which is C. frutescens, a kind extensively used in Paris for summer decoration; the flowers, which are white, completely cover the plant, which is also very useful for pot culture, flowering, as it does, in a cold house until January; it is, however, not quite hardy. Physostegia virginiana bears spikes of purple flowers, which are abundant and lasting; Geranium striatum, with its delicately-pencilled white flowers, and G. nodosum (purple), are also good border plants, both forming neat bushes. Dianthus superbus is an erect-growing species, about 1 ft. in height, with light purple fragrant blossoms, the petals of which are cut into narrow segments, giving them a fringed appearance. Potentilla formosa is one of the best of the genus to which it belongs, its flowers being very numerous and of a bright cherry-red. Statice umbrosa (a dwarf species, with large heads of blue flowers) and its white variety form neat, attractive border plants. The white variety of the Musk-scented Mallow (Malva moschata alba) is a showy plant. Gentiana asclepiadea and its white variety are also good perennials, revelling in any shady, moist spot; I have seen plants of them 3 ft. high with from fifty to sixty stems, each bearing from twelve to eighteen lovely blue flowers, and this in a wild state. Of these plants I saw hundreds during a recent visit to Dalmatia of immense size, growing with Dondia Epipactis, Lilium carniolicum, Veratrum album, and many others, the Gentian especially seeking cool, shady spots. One of the best of this family is Gentiana Froelichii, a perfect gem, but rather difficult to grow; its flowers are large, on stems 3 in. in height, varying from blue to white; in habit it somewhat resembles G. pneumonanthe. Scabiosa vestita, a neat-growing species, with deep lilac flowers on stems 1 ft. in height, is now flowering freely; it is a desirable plant. The Grass of Parnassus (Parnassia palustris) is a pretty bog plant; its delicate white pencilled flowers, on stems varying from 6 in. to 12 in. in height, are very pretty, and the plant can be grown either in pots or in the open ground. Gaultheria procumbens (a well-known evergreen with drooping white bells), and many kinds of Cistus are now flowering freely; C. crispus is exceedingly bright. Calystegia Sepium grandiflora, a large variety of the Common Bindweed, with large, white flowers; C. S. incarnata, a rose-coloured variety; and C. pubescens fl.-pl., with double rose-coloured flowers, are all now in bloom and make excellent climbers. Hablitzia tamnoides, a rapid-growing climber, with greenish-white flowers; Metaplexis Stauntoni, with umbels of white flowers; Convolvulus Scammonia, white; Apios tuberosa, with brown flowers; Tropæolum speciosum, vermilion; and T. pentaphyllum, green and red, are all hardy. The Purple-fringed Orchis (Habenaria psycodes) is flowering freely in shady peat beds, along with a few others of this family. Many varieties of the Tiger Lily are now in fine condition, especially Lilium tigrinum Fortunei and L. t. splendens; the latter is one of the finest of the Tiger group. L. longiflorum Wilsoni is now 3 ft. in height, and is producing white, trumpet-shaped flowers of large size; this is the latest in flower of this section, and certainly the finest. Alstrœmerias are still in perfection, the two best being A. Pelegrina (with large, rose-coloured flowers heavily splashed with purple) and its white variety; both are dwarf and hardy in warm, sheltered spots. Gladioli are now flowering freely, especially G. gandavensis and G. Brenchleyensis, of which there are numerous varieties; among the species at present in bloom are G. purpureo-auratus, a curiously-shaped flower, of a creamy-yellow colour, having three irregular purplish blotches; G. dracocephalus, with bronzy flowers; and G. Colvillei albus. Begonias, especially the bulbous ones, are now a mass of bloom; as pot plants they are very effective, and for bedding purposes in warm, dry soils, they rival even the Geranium. Many of the early-flowering Chrysanthemums are opening their blooms, and the Hollyhocks bid fair to make a good display a little later in the season; they seem to be much better than last year, and in many places are clear of the disease which has almost annihilated collections of this favourite flower. Delphiniums, Pentstemons, Phloxes, and Violas are a blaze of colour, and greatly assist in making the borders gay at this time of the year.

P.

Canna Bihorelli.

Viola Vestal.—This beautiful white bedding Viola received a first-class certificate recently at Chiswick, and well does it deserve that distinction. Its habit is dwarf and compact, and it flowers freely, the blooms being of medium size, excellent in form, and of a pure paper-white hue. It has proved this season to be the most constant and striking of all the white varieties. Bedding Violas have flowered unusually well this year; at Castle Coch they have been the best of all bedding plants.—A.

THE LIBRARY.

A NEW LONDON FLORA.*

This is the latest addition to the series of local British floras which has already reached considerable dimensions, and to which many additions are in course of preparation. It differs from the majority of such works in that it is not confined to any one county or to a very limited district, but includes such plants as grow within an average radius of thirty miles from London. Of course, among local floras, as among most other things, there are many varying methods of work, and a still greater range of excellence or the reverse; and we fear we cannot place Dr. de Crespigny's little volume very high up in the list. Its appearance suggests that it will form a handy companion for a Saturday half-holiday stroll, or a day trip to some of the more favoured but more distant localities mentioned in its pages; but a very slight inspection of its pages dispels this pleasing illusion. It is no drawback to the book that it is in great measure a compilation; this is inevitable from the nature of the work, and is, moreover, openly avowed, but the compilation is executed in a manner which is far from satisfactory, and when tested, shows its incompleteness only too distinctly. The authorities on which each locality rests are only acknowledged generally at the beginning of the book, and the localities themselves have no indication of their respective counties affixed. It is thus impossible to form any estimate as to the probability or otherwise of any particular statement without tracing it to its original source to see upon whose authority it rests; and this is often not only difficult and tedious, but well-nigh impossible. For instance, a rare Spurge (Euphorbia portlandica) is indicated, with some doubt, as growing in "bogs in Charlton Woods" (Kent). This is certainly an error which should never have been perpetuated; the plant in question is almost as unlikely to occur in the London flora as an inhabitant of the Scotch mountains; yet we have no means of tracing this blunder to its source, and the future historian of Kentish plants will have an additional "ambiguity" to investigate, for which he is scarcely likely to be grateful to Dr. de Crespigny. The author has occasionally gone out of his way to be critical. For instance, a rare plant (Bupleurum tenuissimum) was found on Ealing Common, and he suggests that a common one (by no means resembling it) may have been mistaken for it. Yet seeing that the authors of the "Flora of Middlesex," who were by no means likely to make such a mistake, say that they have themselves seen a specimen of the plant from the locality in question, Dr. de Crespigny's criticism is, to say the least of it, unnecessary. A guide to London botany, from which doubtfully, or at any rate certainly, extinct plants should be excluded, would be a useful *vade mecum* for many a half-holiday ramble; but the "New London Flora" can in no sense be said to occupy this position. James Britten.

FLORA OF MAURITIUS AND THE SEYCHELLES.

This has just been published under the authority of the Colonial Government of the Mauritius, who have entrusted the execution of the work to that active botanist, Mr. J. G. Baker. As in the other instalments of the series of colonial floras, of which this volume forms one, the descriptions of the species are purely technical, and the book is intended for the professed botanist. A few of the facts adduced by Mr. Baker in his prefatory remarks are, however, not without interest. It appears that here, more than in any other part of the world except St. Helena, the indigenous vegetation has been replaced to a very great extent by introduced trees, shrubs, and weeds. Many of the Orchids, Ferns, Pandani, and other plants affecting shade and damp have become very rare or are entirely exterminated in consequence of the indiscriminate cutting down of the aboriginal forests which culminated in the last century, while some at least of the interesting trees and shrubs peculiar to the island have shared the same fate. The remarkable proportion borne by introduced plants to the indigenous flora will be seen when it is stated that it is almost as one of the former to three of the latter—269 introductions being enumerated against 869 native species. The island of Mauritius being situated two degrees within the Tropic of Capricorn, it is curious to find some of our commonest British plants represented in its indigenous flora, such, for instance, as the Bindweed (Convolvulus arvensis), Male Fern (Nephrodium Filix-mas), two Plantains (Plantago major and P. lanceolata), Juncus effusus, Cardamine hirsuta, and Cerastium glomeratum. Among the more familiar exotics which have completely established themselves in Mauritius may be named Vinca rosea, two Clerodendrons (C. fragrans and C. macrophyllum), the Marvel of Peru, three Cæsalpinias, Canna indica, and Watercress. The cultivation of sugar was introduced to Mauritius in 1740, and in ten years afterwards it had become so extensively adopted that it almost supplanted the previously grown crops of Cloves, Indigo, Coffee, and Cotton. From 467 tons in 1812, the amount of sugar exported increased until 1860, when it reached a maximum of 131,000 tons, at which time it was calculated that this island, which is scarcely as large as the county of Surrey, produced about one-tenth of the exported sugar of the entire world. Trees are now being extensively planted in the neighbourhood of Port Louis, and the advantage of this course from a sanitary point of view is already apparent; the remains of the aboriginal forests linger only in the recesses of the hills. The large proportion which the Ferns bear to the other Orders included in the flora is very remarkable; 168 species are enumerated, being more than double the number of the Orchideæ, which Order stands next on the list in point of numbers. B. J.

SCOTTISH HORTICULTURAL ASSOCIATION.

At the monthly meeting of this Association, held the other day in Edinburgh, Mr. Dunn, the President, gave an interesting account of the hardy fruits cultivated in the Lothians. After pointing out the great advantage of every one making himself familiar with the sorts of fruits suitable for the locality in which he may be placed, he offered a few observations on the following Strawberries:—Garibaldi, he said, was one of the most useful, being very prolific, and not requiring to be renewed so frequently as the majority of other sorts: he saw no difference between this and the variety named Vicomtesse Héricart de Thury. James Veitch, although not generally cultivated in the Lothians, is an excellent variety; Keen's Seedling he finds is still the best forcing Strawberry in cultivation; Princess Alice Maud he found to be a very useful sort at Dalkeith; while Elton Pine was the best of all the late kinds. These, he said, were the standard sorts. Duke of Edinburgh he considered to be an excellent variety; and New Margaretta did well on light soils; British Queen was the best-flavoured Strawberry in cultivation; Eclipse he considered to be but second-rate in point of flavour. Of Cherries, May Duke is one of the best, and so well known as to require no comment; Black Tartarian he found to be, however, a better cropper. The best late Currant is Raby Castle, but for keeping purposes there is no better than White Dutch; Black Naples was thought to be the best Black Currant—he could, however, find no difference between it and a variety named Lee's Prolific. Of Raspberries none was stated to be equal to Falstolf. Mr. Dunn concluded his remarks by inviting any of the members present to name any other variety not mentioned which they had found to be useful in the Lothians.—Mr. McKennon, Melville Castle, observed that Keen's Seedling, President, and British Queen did well with him.—Mr. Syme (of the Lawson Co.) gave an interesting account of the origin of Garibaldi and Vicomtesse Héricart de Thury, which he considered to be synonymous. He remarked that cultivators should not lose sight of the Black Prince, which he said was the earliest of all known Strawberries.—Mr. Johnston observed that he had lately travelled over the north part of Perthshire, and that there he found Reeves' Eclipse to be the favourite; for fruit of this sent up to London from Kilkerran Castle first prizes were awarded at the great shows: fine samples of the above-named fruits were exhibited by Mr. Dunn and Mr. McKennon. Mr. Grieve furnished a variety of Rhubarb named Stott's Monarch, which he remarked was not new, but in every way an excellent variety, which ought to be more generally known than it is. He also showed a new seedling Campanula of the turbinata section. Mr. Lauder, Goshen, sent a new seedling Gooseberry which he has cultivated for a number of years, and which was excellent in quality. Mr. McLaren, Ballencrieff, also sent a new seedling Gooseberry, raised by Mr. Wright, Preston, similar in appearance to the Hedgehog, but it has the merit of being three weeks earlier than that kind; both these were from East Lothian. Mr. George Thomson, Viewfield, Dalkeith, showed a new seedling Strawberry, a hybrid between Grove End Scarlet and Elton Pine, and the best variety for preserving that is brought to the Edinburgh market. Mr. John Rae, White Linns, furnished a white variety of the Black Currant. M.

COMPLAINT FROM A LADY-BIRD.

What false alarms, resounded here and there
By dolts precipitate or hoax-designers,
Excite your "Colorado Beetle Scare,"
Penny-a-liners?
The Beetle seen at Hereford was I;
Preserver, not destroyer of the 'Tater;
Who eat not it, but off it eat the fly,
Aphis vastator.
The donkeys, from a foe that dould not tell a
Friend! No Doryphora decemlineata,
The Lady-bird am I, the Coccinella
Septempunctata.
"Wolf" is a cry that soon gets counted flam,
Till comes the Wolf indeed, at last unheeded.
Worse folly 'tis to cry out "Wolf!" on lamb,
As Muffs on me did.

—"Punch."

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* "A New London Flora; or, Handbook to the Botanical Localities of the Metropolitan Districts." By Eyre de Crespigny, M.D., &c. London: Hardwicke & Bogue, 1877.

HARDY FLOWERS.

Auriculas.—The continued heavy rains which we are now experiencing make it necessary that considerable care should be taken of these plants, or they will get injured through being too wet at the roots, especially those that have been recently potted. Those that were repotted in June will now be growing freely in the centre, while the large outside leaves put forth in spring will be decaying. The plants are now making what will be their winter garb, and the more firmly they are rooted into the soil the better. In all places where the atmosphere is pure and genial, an occasional soft shower will benefit the plants, if it be not too drenching. The Auricula at this season of the year requires to be moist at the roots, not wet, and the plants will be much healthier in consequence. The difficulties which beset some growers of the Auricula—and successful growers, too—can scarcely be comprehended by those who have had no experience of such adverse conditions. Mr. B. Simonite, Rough Bank, Sheffield, dares not allow a drop of rain to fall on any of his plants, and for this reason, that during a dry time the atmosphere of Sheffield becomes so charged with sulphuric acid, that when rain descends it carries it down to the soil, and it would be almost certain death to his Auriculas. Consequently he grows them in a plant-house all the year round, and in the act of watering the leaves are not wetted. The same difficulty—though in a lesser degree—besets some parts of Manchester. Mr. Samuel Barlow, Stakehill House, Chatterton, grows his collection under glass on a raised stage in a somewhat low house, which he had constructed specially for choice hardy plants; a kind of wooden bed has been constructed 6 in. in depth, and the pots are plunged in coal ashes up to their rims. This keeps the roots cool and moist, and but little water is required. Mr. Barlow has potted his plants in a soil consisting of powdered charcoal, rough turfy loam, and a little manure; and the appearance of the plants indicates how they revel in it. Finally, a piece of tiffany is spread over the glass roof on the outside, and plenty of air is given in favourable weather. Some young cultivators may perhaps be astonished on seeing a plant throw up a late summer truss. The flowers are rarely true to character, and they are out of season; besides, they rather tend to divert the energies of the plant from the production of leaf-growth. Except in the case of seedlings that bloom at what the Yorkshiremen term the "back-end," it is not advisable to allow plants to flower; but to prevent this, do not pinch out the stem entirely, but simply the truss of buds, allowing the stem to dry away gradually, which it will do in a few days. It is not well to pinch out stem and all, as a portion of it will be left, and it may rot and spread decay to the plant. Seed of Auriculas just harvested should be sown as soon as gathered, and that because some of it will germinate at once, and thus nearly a season is gained. Sow the seeds in pans or shallow boxes of fine soil, and place them in a greenhouse or cold frame in a shady position; a little Moss may be laid on the surface of the soil to keep it moist. As soon as the plants are large enough to handle, they should be pricked off into pots that will contain four or five plants, and grow on into size as quickly as possible. The value of sowing seed in August is this—that the autumn and winter's growth is thereby gained, as compared with seedlings raised in spring.

Cyclamens.—A sowing of seed of these beautiful spring-flowering plants should be made without delay. There is nothing like shallow pans in which to sow the seed, and the soil should be a fine, free, sandy one. The pans require to be placed in a brisk, moist bottom-heat, with a piece of glass over the pans. The seed, if full and well-ripened, soon germinates, and when the plants are large enough to have put forth three leaves they should be pricked off into 5-in. pots, in a rich, light soil; the pots should be well drained. The growers of Cyclamens in quantity are now busily engaged in getting their seed sown, and their practice is the one just set forth. Seedlings raised from seed sown in August make good plants to flower fifteen months afterwards, if they be grown on as fast and as liberally as possible.

Forget-me-nots.—Now is the time to make a sowing of these beautiful flowers for spring decoration. Myosotis dissitiflora should be used for early work, and the white and blue varieties of M. sylvatica for later flowering. Though M. dissitiflora is a true perennial, it is much better grown from seed each year than trusting to divided plants. The latter will sometimes stand remarkably well; they did so in a cold, wet, clayey soil in West Middlesex during the past winter, but they cannot always be depended upon; seedlings are more trustworthy. Then there is a very useful summer-flowering Forget-me-not, known as M. semperflorens, which has a particularly durable habit, and which stands well in hot weather; I recently saw this in the neighbourhood of Manchester flowering quite freely in a full sunny exposure. The varieties of M. azorica, and especially that known as Impèratrice Elizabeth, make capital summer-flowering plants in pots; and that dwarf but exceedingly beautiful form, M. rupicola, which has the richest blue among all the Forget-me-nots, is a lovely gem for pot-work, but requires some care to have it in all its beauty. D.

JAPANESE TREES AND SHRUBS AT HOME.

Professor Rein, who has travelled widely in Japan, recently delivered a lecture on the vegetation of Japan before the Horticultural Society of Berlin, and we are indebted to the "Monatsschrift" of that Society for the following extracts:—Of all the species of Hydrangea, H. paniculata is the most widely dispersed in a wild state, ascending to an altitude of 5000 ft., where it forms large bushes. In many places it is used for paper making. The genus Actinidia comprises four or five species, all of which inhabit the mountain forests, climbing from tree to tree, to a height of 65 ft. or more. The fruit of A. rufa and arguta is edible and eaten, being of a bitter-sweet taste, and by no means disagreeable. The fruit of A. polygama is not edible, but it possesses in a remarkable degree the power of attracting cats, and this property is common to the whole plant. This peculiarity is so marked that it has given birth to the proverb, "He sticks to it like a cat to a Matalabi." Schizophragma hydrangeoides, a shrub of climbing habit, closely allied to Hydrangea, is also found in the mountains up to 5000 ft., and on account of its beautiful pure white flowers is highly esteemed. To illustrate his remarks on the timber trees of Japan, Professor Rein exhibited a collection, of Japanese preparation, of 100 vertical and horizontal sections of Japanese woods, mounted in a kind of album on paper. The method of mounting is European, which the Japanese saw in the Exhibition at Vienna in 1873, and the collection was made at the expense of the Government. The most noteworthy among these specimens is a number of differently-coloured varieties of the wood of Cryptomeria japonica, the largest tree in Japan. This sometimes attains quite extraordinary dimensions; Professor Rein measured the trunk of one breast-high, which was nearly 35 ft. in circumference. Retinospora pisifera and obtusa, and Thujopsis dolabrata, are trees of moderate size, occasionally with a trunk 3 ft. in diameter. Professor Rein thinks there are only three species of Pinus native of Japan, namely, P. densiflora, P. Massoniana, and P. parviflora. The two first are favourite trees of the Japanese, and are represented in lacquer and on porcelain ware, and living specimens are found in nearly all gardens. Some of the latter are curiously distorted, and from 200 years to 500 years old, and they are regarded with an amount of veneration bordering on worship. Some of them have very long, horizontal branches resting on the ground. P. Massoniana loves a sandy soil, is hardier, and perhaps rather larger than P. densiflora, and consequently more generally cultivated. It forms magnificent avenues, its rich dark green, long leaves being very beautiful. It attains a height of 100 ft., with a diameter of 6 ft. P. parviflora belongs to the group with five leaves in each sheath. It is widely dispersed in Japan, and reaches an altitude of 9000 ft., where it becomes shrubby. P. koraiensis is only cultivated in Japan. Abies Tsuga is extremely common in mountain forests up to from 5000 ft. to 6000 ft., as also A. polita, A. firma, and A. Alcoquiana. Salisburia adiantifolia is not wild in any part of Japan, and is exclusively planted near the temples. The largest specimen seen by Professor Rein, which is regarded by the Japanese as the largest in the empire, measured nearly 23 ft. in circumference, but it was scarcely 50 ft. high. Juglans mandschurica and Pterocarya sorbifolia are the only Juglandeæ. Among the Cupuliferæ Oaks are represented by twenty-two species, about one-third of which are evergreen. The latter are mainly confined to the southern parts, and probably do not extend further north than the Bay of Yeddo. About the town of Yeddo they are very much cultivated.

Forests of evergreen Oaks were only seen in the southernmost island, Kiouson. One species, Quercus cuspidata, has edible acorns, which, boiled or roasted, are offered for sale in the streets in winter. The wood of the evergreen species is regarded as better and tougher than that of the deciduous species, and is preferred for many purposes. Castanea vesca is wild throughout Japan; Professor Rein observed it in sixty districts. Beeches are abundant, and are of two species, F. sylvatica and F. Sieboldi. Planera japonica (P. Kaki) furnishes the most valuable wood, for cabinet furniture and turnery, of all the deciduous trees of the country. The wooden plates and dishes generally used are made of this wood, and it is universally affirmed that it never cracks. This tree, Laurus Cinnamomum, and L. Camphora are the largest of Japanese trees, occasionally as much as 20 ft. in circumference. Buxus sempervirens is exceedingly common in the south, and its wood is almost exclusively used for making combs. Distylium racemosum occurs only in the southern districts; it has a very hard wood, which is likewise used for making combs, and the bark is burnt and the ashes sent to the different porcelain districts, where mixed with the earth it is used as a glaze. There are two species of Ilex, I. crenata and I. integrifolia. Magnolia hypoleuca furnishes a most important wood, and the ashes serve for rubbing down lacquered work. From the extremely fine-grained flexible wood the familiar elliptical bread baskets are made, and all sorts of thin lacquered ware. This Magnolia is a stately tree, with leaves about 10 in. long, arranged in whorls, giving the tree at a distance the appearance of a Horse Chestnut. It grows in the mountain forests associated with Beeches and Æsculus turbinata, and trunks more than 1 ft. in diameter are not uncommon. Paulownia imperialis is another example of a tree commonly cultivated which is not indigenous to Japan. The soft wood is employed in making shoes, and for making light boxes, in which the more fragile articles of lacquered ware are packed. Eurodia glauca is rapidly disappearing from the forests, and it is not yet cultivated. The inner bark is eagerly sought for dyeing silk of a yellow colour. Six species of Rhus have been observed in Japan, though two of them, R. succedanea and R. vernicifera, are only cultivated, and originally introduced from China. The cultivation of R. vernicifera and the collection of the lacquer is one of the principal industries of Japan. Some of the villages are completely surrounded by forests of this small tree. Like R. Toxicodendron and some other species, this is venomous to some, in fact, to most persons on first touching it; but it is averred that the same person suffers only once. Contact with the plant, or the lacquer it produces, or even inhalation of the vapour, causes the softer parts of the hands between the fingers, the tips of the ears, margins of the eyes, cheeks, scrotum, &c., to swell and inflame, and during four or five days the effects are very painful. The Camellia occurs wild as a shrub on the eastern side northwards of the Bay of Yeddo (36° N. lat.), and, strange to say, up to nearly 39° on the colder western side where Professor Rein found it as underwood, rarely exceeding 1 yd. high in hill forests up to an elevation of 800 ft. to 1000 ft. Advancing southwards it is gradually larger, and in the southernmost island it is quite arborescent, though never so large as the largest cultivated specimens seen. It is a noteworthy fact that Professor Rein found Camellias growing and flowering under Beech trees, with Asperula odorata carpeting the ground beneath. Many large cultivated specimens were measured, and some were found with a trunk 4½ ft. in girth, and over 30 ft. high. Though not found wild so far north, it succeeds up to 40° N. lat. on the western coast, where it is cultivated mainly for the oil furnished by the seeds, which is used for anointing the hair. With regard to Broussonetia papyrifera, Professor Rein mentioned that attempts were being made to cultivate this useful tree in Germany, on account of the dearth of material for the manufacture of paper. At his instigation, 10,000 seedlings have been procured from France, and planted on the railroad banks near Frankfort-on-Maine and Wiesbaden, besides 1000 young trees.

Other plants used for paper-making in Japan are Edgworthia papyrifera, Wickstrœmia canescens, Aphananthe aspera, and Morus alba. Paper from Aralia papyrifera is only made in Formosa. In answer to some inquiries, Professor Rein stated that Wistaria sinensis is wild throughout Japan, and not introduced, as Siebold affirmed, from China; it fruits freely. W. brachystachys, which was not found growing wild, may be a variety of W. sinensis. Miniature varieties of native trees were not observed, though artificially-dwarfed specimens of numerous species are so largely cultivated.—Translated in "Gardeners' Chronicle."

Origin of the Name May Duke.—Would you kindly before the next meeting of our Horticultural Society (23rd August) give me the derivation of the British names of *Duke* and *May Duke* as applied to Cherries? For want of a better I imagine it must be the English corruption of the French adjective *doux*, sweet—as the *Dukes* are all, I believe, sweet Cherries, but having no authority for my surmise, I contented myself with pooh-poohing the very ridiculous ones seriously brought forward to-day of *My Duck*, a term of endearment because they were good, and *Médoc*, because they came from that French province, which latter is very problematical, to say the least of it.—Frederick Palmer, *Versailles*.—[The notion that May Duke is a corruption of Médoc has frequently been brought forward, and is the most reasonable of the three you mention. But a little research shows that this is untenable: for the name Duke is of earlier date than that of May Duke. Parkinson in 1629 speaks of a kind then known as the Archduke's Cherry. Ray in 1688, enumerates "the May Cherry, so called from its being ripe in May," the Duke Cherry, the Archduke Cherry, &c. Rea, in 1702, has the May and the Archduke: and Miller, in 1731, is the first to mention the May-Duke, which he places between the May Cherry and the Archduke. This position suggests that the "May Duke" was thought intermediate in character between the May Cherry and the Archduke, and if this were so, the origin of the name is explained. The Duke Cherry was evidently a well-known kind; Martyn names Harrison's Duke Cherry as a special variety of it, and later writers have different kinds of Duke Cherry. By slight alterations the original meaning of the name is lost: thus Miller mentions the Lukewards Cherry, a name which we can trace back to Gerarde, who calls it "Luke Warde's Cherrie," and says it is "so called because he was the first that brought the same out of Italy."—J. B.]

Mesembryanthemum cordifolium variegatum.—Have those who use this charming bedding plant observed the great difference of growth that exists between autumn and spring struck plants? I find the former to produce a close, compact growth with foliage of a very bright silvery hue, and to make the most dense and neat carpet. Spring-struck plants, on the other hand, run about almost wildly, require no end of attention and pinching, and the foliage is less bright in colour. Where very neat lines and good contrasts are desired, in conjunction with the green Mentha, the Golden Feather, or the Red Alternanthera, autumn-struck plants are much the best. Cuttings should be put in pans or boxes thickly early in September, and be placed under glass to root; these can remain in the store pans until March, when they should be potted off or be planted out in frames to make further growth.—A. D.

Cypripedium spectabile. — A photograph of a group of this fine terrestrial Lady's Slipper, growing in the Botanic Garden, Birmingham, has just been sent to us, and shows to what perfection this plant may be brought by means of skilful treatment. Mr. Latham, Curator, informs us that it was sent to him from Canada—some of the clumps three years ago, others last autumn. They were firmly potted in good peat, in well-drained pots, then they were placed in a cold frame, where they remained all winter—in fact, till they were in flower; the only attention which they received was careful watering through the winter months, the soil being kept moist (not wet) till the plants were in vigorous growth. They then got plenty of water, and have been kept well watered during the summer months. A little frost will do them no harm when at rest, but if the frost be severe they must be protected. They start early into growth in spring, and should be kept back as much as possible till the weather is such that they can have plenty of air. They should not be coddled, neither should the cold spring frosts or keen winds be allowed to touch them when they have once started into growth.

NOTES AND QUESTIONS—VARIOUS.

A Showy Climber.—I shall feel obliged by your naming the accompanying fruit, seeds of which were brought from Berlin. They were sown in March and the seedlings were planted out in April along with some Melon plants. They began fruiting in July, and, when ripe, the fruit cracks like that enclosed It is very handsome.—R. D., *Newark*.—[The fruit sent is that of Momordica Charantia, of which a representation is given at p. 161.

Veitch's Perfection Pea.—This I find to be one of the best of Peas. Its flavour is good, its habit dwarf, and it is also an excellent cropper. I sowed six rows the first week in March, and began to gather on the 2nd of July. I have been gathering nearly every day since; in fact, one of the principal points in Pea culture is to gather often, and so prolong the bearing properties of the plants. I have to-day (August 15) gathered a fine dish from the same Peas, which are growing on a sandy soil, and have only been watered twice.—T. Selfe, *Manor House, Market Lavington, Devizes.*

Wimbledon Common and Gravel Digging.—An application was made to the magistrates of the Wandsworth division on the 21st ult. by the Wimbledon Local Board, for permission to dig gravel on the common. The ground on which the application was made was that a considerable saving would be effected if the Board could avoid going a long distance for the gravel they required. Evidence was given that the common would be destroyed in a few years if the required permission were given, and the bench unanimously refused it.

Irises from Seed.—Will you kindly give me some information as to the best method of raising Irises from seed?—S. [Seeds of all the strong-growing Irises I sow in a well-prepared bed of light soil in the open ground immediately they are gathered; also many of the bulbous and tuberous-rooted species such as I, tuberosa, anglica, hispanica, alata, &c. The smaller and more delicate kinds, evergreen, bulbous, and tuberous-rooted, I sow in pans in sandy, well-drained soil, plunging the pans in Cocoa-nut fibre or ashes in a cold frame, where they are sheltered from wet. If sown immediately they are gathered they will invariably germinate early in spring, and form strong plants the first year. If the seed be not sown until spring, in many cases they will not germinate until the following spring, and during that time they become a prey to mice and other vermin which frequently destroy them.—P.]

Red Ants.—The house in which I reside is infested with minute red ants and I do not know how to get rid of them. For a time Keating's Insect Powder kept them down, but so soon as the strength of the powder was exhausted they returned seemingly more numerous than ever. I have tried carbolic acid solution, but it does not answer. Can any of your readers tell me of anything which I can use to drive them away, as they are a serious nuisance.—W. Milner, *Birkenhead.*

No. 301.] SATURDAY, AUGUST 25, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

SCENT-YIELDING ROSES.

By G. W. SEPTIMUS PIESSE, Ph.D., F.C S.

I PROPOSE to describe the scent-yielding plants—their culture and their products—so must needs say a few words by way of preface, because certain parts of nearly all plants yield odour, as, for example, Mint and Patchouly from the leaves, Orris and Sumbul from the root, Cinnamon from the bark, Nutmeg and Caraway from the seeds, Roses and Violets from the flowers, Santal and Cedar from the wood; yet, of the thousands of plants that are somewhere in themselves fragrant, there are but few—wonderfully few—that are cultivated as scent-yielding plants in a commercial point of view. To these I will more particularly confine my observations, and first of all I will take

The Rose,

because

Its breath
Is rich beyond the rest, and when it dies
It doth bequeath a charm to sweeten death.

There are two methods of obtaining scent from the Rose, both operations being carried on to a considerable extent. In Roumelia the flowers are distilled for the purpose of obtaining the Attar or Otto of Roses. In the south of France the *enfleurage* process is adopted, which yields a spirituous scent of the Rose. The principal Rose farms on which the distilling process is adopted are situated in the valley of Kézanlik, in Roumelia, at the foot of the Balkan Mountains; the principal town, Kézanlik, bears the same name as the province, and can now easily be picked out in the war maps of the day. The province of Kézanlik extends for about 40 miles east to west, and is watered principally by the River Thunga. It contains many small villages, the peasants of which are employed in the culture of the Rose. The only Rose cultivated for its scent, both in Roumelia and in France is the Provence or Cabbage Rose. It can be planted either in spring or in autumn. On Messrs. Collas & Christoff's farm, where Roses are grown, parallel furrows are cut at distances of 5 ft. apart, 4 in. deep, and the same in width; into these furrows shoots from the old Rose bushes are laid, not cut, but so broken off as to have a portion of the old root attached to them; these are then covered up with earth and a little manure; if water be near, the furrows are inundated, otherwise the grower trusts to what may fall in the shape of rain. In six months young shoots appear which are then earthed up. During the first year they make about 4 ft. of wood; the second year a few flowers are produced; but a crop is only secured in the third year; the plants then begin to have the aspect of thickets, which soon become perfect hedges 6 ft. high, and which will bloom well for fifteen years. During this period dead wood is cut out, but the bushes are not pruned in the ordinary sense of the word. The Balkan Mountains keep off in a great measure north and west winds; nevertheless, in spring the Roses often sustain great injury from these and frost.

The Cabbage Rose (Rosa centifolia).

Rosa damascena.

As a rule, the Rose harvest begins in the middle of May, and consequently this is the time for distilling, an operation which lasts for, say twenty-five days. Supposing a plantation to produce in one season 50,000 lb. of flowers, there must be garnered and distilled 2000 lb. each day. The flowers are gathered before sunrise, and are distilled by noon of the same day. As seasons differ, so do the crops and the quantity of Otto produced. The amount of Otto is greatest when the temperature at the time of distilling is low, and *vice versâ* When the weather is warm there is an abundance of bloom, but the yield of Otto is less; favourable weather is, therefore, better than large crops of blossom. The stills are on the same principle as regards construction in all parts of the world where there are flower-farms, but they vary considerably in size. At Mitcham, in Surrey, Piesse & Lubin's stills hold one ton and three-quarters of a ton respectively; these are used for distilling Peppermint and Lavender, Cloves and Caraways, &c., while the stills employed by M. Herman, of Cannes, only hold half-a-hundredweight; these are used for distilling Orange flowers. The Rose stills used at Kézanlik hold about two-and-half hundredweights. The still is a copper vessel or boiler, known as the alembic, broad at the base, and becoming narrower towards the top, on which is fitted the dome or neck to which is attached the condensing pipe. Water and Roses are put into the alembic, then a fire is lighted under it, and when the water boils the steam generated carries forward the Attar from the Roses into the refrigerator; the Otto floats on the condensed water, and is thus collected. On an average it requires 3000 lb. of blossom to produce 1 lb. of Otto—say 16 oz., Otto of Roses always being sold by the ounce, which in Turkey is somewhat more than the English ounce.

Baring, in his report on the exports of Roumelia, recently published by order of the Government, says:—"One of the chief manufactures is that of Attar of Roses, the average annual amount produced being 800,000 'Mescals' of about 1½ dram each, at about 16 piculs the mescal, and the whole is exported to England, &c."

Mr. Baring adds that "one of the effects of the insurrection will be to diminish the amount by about one-half. The village of Dervent produced large quantities of this valuable perfume, but the stills have been burnt or stolen, and it will be years before the inhabitants can replace them. In the other villages of the district which have not been burnt the insecurity of the country renders it impossible for the peasants to go to the Rose field before dawn in order to be able to pick the flowers when the dew is on them." The insignificance of the Roses at Dervent will be shown by comparing the total production of the districts. Dervent is a village in Zaaghra, in which there are ten others. Let us therefore summarise the production of Attar in Roumelia, thus:—

	ounces.
Kézanlik	27,776
Guenpsa	12,064
Karaja-Bahg	6,144
Tchirpan	2,592
Koyoun-Tépé	1,888
Pazardjik	1,760
Yeni-Zaaghra	1,728
Zaaghra	1,568
	55,520

This estimate is based on the average production of the last ten years, but in 1866 it reached 96,000 ounces, and in 1872 it fell to 27,200 ounces. As to the commercial value of the Attar it may fairly be estimated when pure at from 25s. to 30s. per ounce. In round numbers we may therefore say that the Rose farms of Roumelia are worth £70,000 to £80,000 per annum. That Rose and other flower farms could be established in Fiji, Queensland, and at Swan River I have but little doubt, and to landowners there I commend the figures just recorded.

Modes of Obtaining the Scent.

Many flowers, according to the method adopted to extract the perfume, yield more than one scent; it is so with even the same variety of Rose; when distilled it furnishes the well-known Attar, and coming as it does direct from the flowers, one would imagine that it would smell like them, but it does not; it has a very pleasing odour, but certainly not exactly that of the Rose, which is only obtained by the process of *enfleurage* and *macération*. It is now a well-known fact that fatty substances absorb scents. If we spread very clean grease—say a butter made of a mixture of lard and beef suet—upon a plate, then sprinkle freshly-gathered scent-yielding flowers upon it and cover the whole with another plate, leaving them thus together for a few hours, the butter will absorb the odorous particles, and become itself fragrant; again, if the butter be melted at as low a heat as possible and flowers be put bodily into it and left there for a time, the grease also in this way becomes scented; the former is called the *enfleurage* process, the latter the *macération*. Roses are treated by these joint operations, but some other flowers for practical reasons are worked by one or the other only. In the valley of the Var, Alpes Maritimes, France, an important industry in this direction exists. Farms for the growth of flowers, and vast laboratories for their manipulation are to be found at Grasse, Cannes, and Nice, where Roses are cultivated in a very similar manner to that already described, but they are not allowed to form themselves into hedges, as in Roumelia. During the flowering season the air is laden with fragrance, and women and children gather the blossoms, which they place in little panniers like anglers' baskets hung over the shoulder; they are then carried to the laboratory and weighed, the weighing determining the earnings of the little garnerers. In the laboratory, anticipating the harvest, great quantities of the butter have been collected, melted, washed, and clarified. The success of this process depends on the absolute purity of the grease, and no pains are spared to effect this end the fat being repeatedly melted with a good bulk of alum, salt, and nitre; then it is washed over and over again with plain water, and Rose and Orange water; finally, it is again melted with a little gum benzoin. The butter, thus purified, loses all traces of its animal origin; it is odourless as the purest water, but wonderfully ready to absorb fragrance from scent-yielding substances near it. In each laboratory there are several thousand *chassis* (sashes), or framed glasses, upon which the grease to be scented is spread, and upon these the blossoms are sprinkled or laid; the *chassis en verre* is, in fact, a frame with a glass in it, as nearly as possible like a window-sash, except that the frame is 2 in. thicker, so that when one *chassis* is placed on another there is a space of 4 in. between every two glasses, thus allowing room for blossoms; each *chassis* or sash is about 2 ft. long and 18 in. wide. The Roses are changed every day, or every other day, as may be convenient; the same butter remains in the *chassis* for, say, about two-thirds of the time during which the Roses are in bloom; but each time fresh flowers are put on it is "worked," that is, serrated with a palate knife, so as to present a new surface to the flowers; the butter being inflowered in this way for the given time, is then scraped off the several *chassis* and liquefied in an appropriate vessel placed in a hot-water bath. Fresh Roses are then put into the liquefied grease, and there they remain for a few hours; then the butter is carefully strained into a similar vessel, to which fresh flowers are added, and this operation—maceration—is repeated until the end of the Rose season; finally, the butter is again strained and poured into tin canisters. When cold it has a most delightful and natural scent of Roses, and is now fit for exportation to all parts of the world.

Olive oil can be inflowered in a similar way to butter, but in place of glass the frames are filled with coarse wire gauze; these are called *chassis en fer*. Upon the wire net is laid a *molleton*, or very thick cotton fabric resembling the fluffy towel now in use, soaked with fine oil; after continuous changing of the blossoms the *molletons* are folded together and the oil is squeezed out by the aid of a screw press; then this same oil is slightly warmed and charged with fresh flowers for many days' and finally strained; it is then ready for sale. Both the butter and the oil acquire a good colour through the pollen of the flowers, but no tint is communicated by the petals.

The Perfume.

In order now to obtain the scent of the Rose in the form used for scenting handkerchiefs, we have to infuse the inflowered butter or oil in strong alcohol, that is, a spirit containing not less than 90 per cent. of absolute alcohol; the solid butter has to be cut up fine or granulated under what may be termed a Macaroni press; it is then put into the spirit and there allowed to remain for several days. If oil be used, it must be shaken up daily with the spirit, the result being that the spirit extracts all the odour from the fatty body and becomes itself "perfume," while the grease on the other hand becomes odourless. As a rule, it requires 5 lb. of blossoms to inflower 1 lb. of grease, and 8 lb. of the best of this is used to every gallon of alcohol. The spirit comes away from the butter quite bright, of a pretty pale emerald colour. To every gallon of Rose perfume thus made must be added 1 oz. of Roumelia Attar, and in this way the finest Rose scent is obtained. Numerous valuable products are got from the Rosa centifolia and the Rosa damascena, but their manufacture is too technical for description in The Garden.

Hughenden House, Chiswick.

Godetia Lady Albemarle.—A correspondent writes (see p. 143) in somewhat glowing terms of the beauty of this new hardy annual, and without doubt it is a charming plant; but it only displays its beauties in sunny weather. I have to complain regarding it that it has not received, before being sent out, the selection that it deserves, inasmuch as I find quite one-third of the plants to be tall and branching, whilst the others are very dwarf and compact; this diversity naturally spoils its value as a bedding plant.—D.

Pentstemon secundiflorus.—This is a handsome blue-flowered Pentstemon, taller than P. lætus, and of similar habit to P. glaber and P. speciosus. It differs from both these species, however, in its long one-sided raceme of flowers, the corolla being about 1½ in. in length, of a beautiful clear blue internally, and of purplish-blue externally. It is as hardy as P. lætus, and succeeds in ordinary soil, blooming the second season from seeds. It is a native of the subalpine districts of Colorado.—W. Thompson, *Ipswich.*

NOTES OF THE WEEK.

Chrysanthemums Grafted.—At the Royal Nurseries, Slough, I observed the other day what to me seemed to be a novelty in Chrysanthemum growing, viz., over 200 fine plants worked as standards on 3-ft. stems, several sorts which bloom simultaneously being grafted into one head. Only one plant was grown in this way last year, but the effect which it produced was so striking as to induce Mr. Turner to cultivate Chrysanthemums largely in that manner.—D. S. E.

The Rose Farms of Roumelia.—The article which we publish to-day by Dr. Piesse deals in part with the very interesting culture of Roses for the extraction of their scent in that now unhappy country, Roumelia. Dr. Piesse's thorough knowledge of the subject makes his article useful at a time when various very incorrect statements about it are frequently published.

Rhexia virginica.—This "Meadow Beauty," as now seen in the Fulham Nurseries, is very attractive. The plants are dwarf and profusely flowered, and being planted in moist, sandy soil, they look as if they would continue in bloom for a long time to come. A coloured illustration of this plant will be found in The Garden, Vol. XI., p. 294.—S.

A New Campanula (C. flexuosa).—This is now in full flower, and has been so for some weeks on the rockwork in the York Nurseries. The flowers, which are bright purple, are saucer-shaped, measure nearly 1 in. in diameter, and are borne on slender, wiry, much-branched stems from 4 in. to 6 in. in height. The specimen now in flower is a very fine one, having over 300 blooms on it. It is a sun-loving plant, and thrives in loam and limestone, which should be broken into small pieces, and thoroughly incorporated with the loam.—R. P.

Hypericum hircinum.—This, one of the showiest of late summer and autumn flowering shrubs, is just now a feathery mass of light green leaves thickly plumed with golden blossoms. Like the rest of the family, it is rabbit-proof, an important qualification in these days, and is well suited for the wild garden and woodland shrubbery; it grows about 8 ft. high, and its only drawback is the unpleasant smell of goat which it diffuses before coming into flower. This is perceptible at a distance of several feet; therefore, it should not be planted close to a dwelling-house.—Salmoniceps.

The Dell in Hyde Park.—This is tastefully arranged this year; the groups "held together" better than before. The tropical plants look very well. A few bits of colour perhaps would have improved matters, especially in the distance. We, however, trust that this culture of the tender tropical plants for the open air will not be increased in our public gardens. Every day adds to our riches in hardy plants that require no hothouses and furnish as fine effects as any tropical plants. If we go beyond hardy plants, it should be in the direction of such subjects as Chamærops excelsa, the New Zealand Flax, and the Palmetto Palm. These are hardy in some parts of England, and large specimens might be placed in the open air about London for a much longer period than the tropical species, which languish out-of-doors for a short time with us.

The New Early Peaches in 1877.—Considerable interest has been excited North and South, as to which Peach would eventually prove earliest. Prominent among the quick-maturing varieties are Amsden's June, Alexander, Early Beatrice, Early Rivers, and Early Louise. Careful inquiry in Virginia and North Carolina elicits the fact that, planted side by side, there is really little difference in the season of ripening between Amsden's, Alexander, and Beatrice, but that Amsden's is the handsomest and best of the three. Early Rivers is perhaps the finest of all, but rather later, coming in with Hale's Early, although greatly superior in quality to that famed variety. Under glass, when grown with especial care and skill, all of the foregoing have proved exceedingly fine; and if forced Peaches will pay at all, we certainly have in the foregoing a valuable list to select from. We hear also favourable accounts of Early Louise, yet as it is later than its near relative, Early Beatrice, it may not prove so valuable.—*New York Tribune.*

The Sorrel Tree (Andromeda arborea).—We are indebted to Mr. A. Waterer, of Knaphill, for free-flowering specimens of this fine tree-like shrub now coming into bloom and bearing many racemes of Lily-of-the-Valley-like blossoms. We learn from the "American Agriculturist" that "in its native country it is valuable for the fruit, which hangs on until winter. It is a native of Pennsylvania and southward, and is quite hardy in Massachusetts. One of its great merits is that though it will grow from 30 ft. to 60 ft. high, it will bloom when only 4 ft. to 6 ft. high, and serves either as a shrub or a tree. Our reason for mentioning it now is to call attention to the beauty of its foliage in autumn. This year, when our autumn colours have been much less brilliant than usual, by far the most brilliant display of colour that we have seen has been made by our clump of Sorrel tree. The foliage began to turn a dull red, and finally blazed out in the most intense of crimsons, almost dazzling when the sun shone upon it. The tree has another good property—the leaves remain on a long while after they change, and we have this year enjoyed their brilliancy for between two or three weeks. The Sorrel tree is one that we can heartily recommend to the attention of all lovers of really choice trees and shrubs."

The California Buckeye.—We should be greatly obliged to any reader for good racemes of flower of this tree, Æsculus californica.

The Huon Pine (Dacrydium Franklini) at Longleat.—This most graceful Pine is now very beautiful in the open air at Longleat, where it is quite hardy and bears fruit. It has attained a height of 31 ft. The graceful twine-like branchlets are of a beautiful grass green.

Aspidium fragrans.—Ferns under all circumstances are beautifu and generally popular, but when sweet-scented as this is, they are doubly valuable. Messrs. Osborn have several plants of this Aspidium, the fronds of which, in addition to their beauty, which is great, are almost as fragrant as Violets. Though not entirely new this Fern is as yet very rare.—S.

Fuchsia gracilis at Kensington.—Large bushes of this outdoor Fuchsia are very attractive just now in the Horticultural Society's garden at South Kensington; they are growing on banks and other raised surfaces in positions from which their branches droop over the dwarf terrace walls. Thus situated they have a graceful effect; but they are also very effective when planted in hollow tree stumps and places of that kind.—S.

A Pretty Combination.—One of the most effective combinations of colour for the wild garden may be obtained by grouping together Clematis Flammula, C. Hendersoni, and C. Viticella rubra grandiflora. If these be allowed to scramble unrestricted over old roots or dead trees, their white, blue and claret-coloured flowers intermixed will be found to be strikingly pretty. Being all plants, too, that will succeed near towns, they might be largely used for draping balconies, porches, &c., and even for covering ordinary walls.—C. S.

Passiflora princeps.—This well-known Passion-flower is unsurpassed for training under the roofs of greenhouses or conservatories, for although generally considered a stove plant, it will flourish perfectly in a much cooler temperature than that of a stove. In one of the glass houses of the Fulham Nurseries, plants of this Passion-flower have been in blossom ever since Christmas, and their long drooping spray, laden with bright star-like flowers, intermixed with other flowering and ornamental-leaved plants, as may be seen here, is very effective.—S.

Disfigurement of the Water in Regent's Park.—A long line of ugly black posts with chains attached stretches through one of the most beautiful reaches in the ornamental water in Regent's Park, and spoils its effect. The chains and posts were, we understand, placed in this position in order to prevent people landing from boats in a private garden. This, however, if allowable, might have been equally well secured by placing the posts near the shore. It is surely wrong to mar the effect of a beautiful piece of water in this manner.

Myosotis Imperatrice Elizabeth.—This is one of the most valuable of Forget-me-nots, inasmuch as, unlike other kinds, it will remain in bloom, if properly attended to, during the whole summer. All that is required is to keep the decayed blossoms regularly picked off in order to prevent the formation of seed. Thus treated, the plants will continually throw up young growths, all of which will produce in profusion little compact trusses of pretty dark-blue blossoms, which are admirably adapted for use in button-hole or other small bouquets. We saw a quantity of it the other day in good condition in Messrs. Carter's Nursery at Sydenham, where it is used with good effect as an edging plant.

Royal Horticultural Society's Great Summer Show in 1878.—This is to take place in the gardens at South Kensington on Tuesday, May 28, and will remain open until the evening of Friday, May 31. Schedules may be had on application to the secretary.

Pelargonium Society.—This Society has just issued its balance sheet for 1876-7, from which it appears that the annual subscriptions amounted to £88 12s.; that the amount of prize money distributed amongst exhibitors on June 19 was £87 2s. 6d.; and that the Society has a balance in hand of £42 6s. 8d.

HARDY LILIES.

As the time is at hand when bulbs have to be ordered, it should be borne in mind that however beautiful nearly all the known Lilies are, some of them are extremely fastidious; but there is a rare choice of beauty among those which are easily cultivated, and no one can go wrong in growing the following with ordinary care, especially avoiding digging in manure with the bulbs, though they accept it gratefully as a top-dressing liberally applied after being established a year. The only manure to be dug in at the time of planting is rich peat and sand, one-third of the latter. This is advisedly called manure. Lilium auratum in light soils is all the better for a top-dressing of clay put on dry and broken small. L. Szovitzianum, of which a coloured plate is given in The Garden, Vol. IX., p. 204, is a gorgeous early-flowering kind of easy culture. L. tigrinum, though very common in some districts, is rarely seen in others, though easily grown in all; for splendour of colour and exquisite form, this old Lily is unsurpassed. L. candidum is equally common, yet unsurpassed for purity. No flower presents a better contrast than that of the golden stamens and snowy perianth. L. chalcedonicum, pure scarlet, grows in any soil, but revels in peat and sand; there is a pure white form which I have not yet obtained. L. testaceum, excelsum, or isabellinum—a delicate apricot or nankeen colour, with golden anthers, is easily grown, and very distinct; it prefers peat and sand. Of L. Thunbergianum there are many varieties, the best being the deep crimson and carmine dwarf sort. L. speciosum, which is quite hardy, succeeds beautifully in loam and peat. Dr. Wallace has given such complete directions for growing Lilies that the only excuse for offering these notes is that so many persons have been disappointed in attempting to grow delicate kinds such as L. longiflorum, Thomsonianum, and others, that the really easily-grown species should be better known. It should be remembered that bulbs of nearly all Lilies occasionally lie dormant a whole season, and push out luxuriantly the following summer. Salmoniceps.

NOTES FROM KEW.

As has been before stated in "The Garden," the Orchid collection at Kew is certainly much better in point of cultivation than it was a few years ago. At present, in addition to several species of mere botanical interest, there are in bloom some fine examples of Cattleya crispa, also a plant of the rare Dendrobium bigibbum, the handsomest of Australian Dendrobes, and, moreover, one of the most difficult to cultivate. Its flowers are fairly large, and of a fine rosy-purple colour. The only plant in the Palm house that struck us as worthy of special mention at the present moment is Solanum venustum, a species similar to, but finer than S. jasminoides. It has large drooping panicles of beautifully-tinted, pale-blue flowers. The individual blooms are about the same size as in the last-named species; like that, too, it is a native of Brazil. The large Musa Ensete is about to flower, and as a consequence is fast losing its freshness and beauty. In the old Lily house two splendid Cannas are planted out in one of the wet tank-beds; one (C. flaccida) has green leaves, very large yellow flowers, and is a much smaller plant than C. limbata, which has attained a height of 9 ft.; its leaves are very large, dark green, and banded with chocolate. The first is from Carolina, the other from Brazil. We also meet with Alstonia sericea in the same house. This is by no means one of the least handsome members of the Periwinkle family; its beautiful, pure white star-like flowers speak highly in its favour. It comes from the Indian Archipelago, and any treatment that will suit Vinca rosea and its allies will do for this. There are many fine Amaryllids scattered about in the cooler houses, perhaps the most showy being Hippeastrum splendens; its large, deep red flowers, with whitish bars running down the perianth segments, produce a fine effect. Hedychium Gardnerianum is planted out in No. 4. Where room can be allowed, this plant will certainly pay for it. Fritz Müller, who has observed the Hedychiums in Brazil, asserts that some are perfectly sterile with their own pollen; they are fertilized by pollen brought on the wings of butterflies, and deposited on the protruded stigmas during the fluttering of the insects about the flowers. The herbaceous department contains much to admire just now. In the small pond dedicated to aquatics we observe four American plants well worthy of cultivation in every place where water plants can be grown easily. They are Thalia dealbata, Justicia pedunculosa, Pontederia cœrulea, and Peltandra virginica. All are perfectly hardy. The first-named is generally cultivated as a stove or greenhouse plant; it, however, thrives thoroughly well planted out under water like any ordinary aquatic. Clematis Davidiana is flowering near a wall. This species is nearly allied to C. tubulosa; like that, it has heads of pale blue flowers, and large trifoliolate leaves; the stem is herbaceous (except at the base where it is rather woody), attaining a height of little more than 2 ft. This species was recently introduced from China into the Paris Jardin des Plantes. The three most beautiful Grasses at present to be seen in the Kew collection are Sorghum halepense (from South Europe), the Mexican Panicum bulbosum, and a very fine Feather Grass (Stipa papposa). The stems of the first-named are about 6 ft. high, with numerous drooping leaves from 1½ ft. to 2 ft. long, and nearly 1 in. broad at the widest part. The next is a light, airy-looking species, very graceful, of a totally different style from the last, less in all its parts. All three would answer exceedingly well as single specimens on lawns. G.

HARDY SURE-BEARING APPLES.

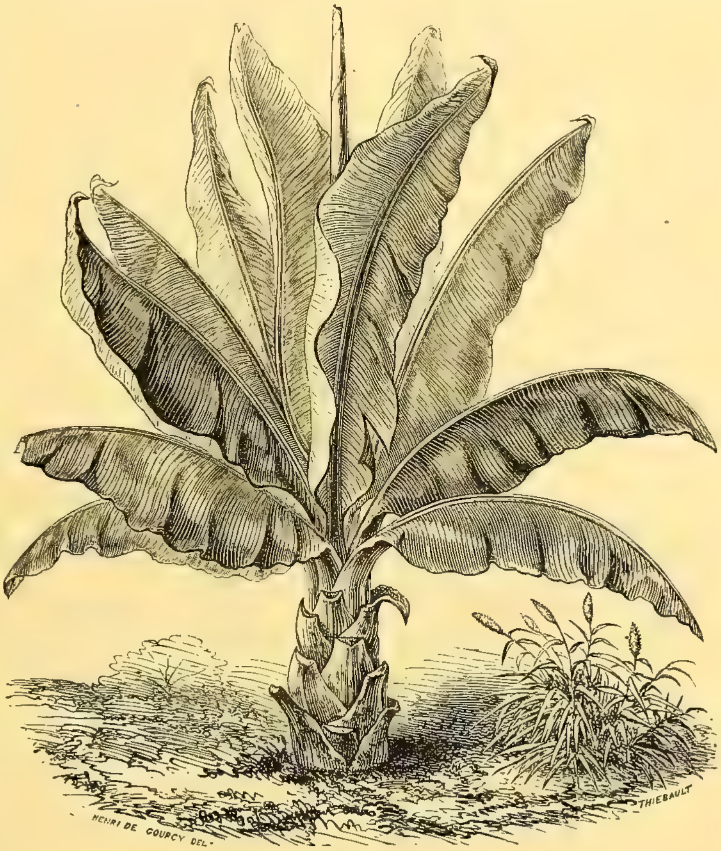
When the reports of fruit on all sides are so unfavourable, and Apples are represented by a few kinds only which are bearing plentifully, it is well to consider what sorts should form the bulk of our collections. In the reports that have been published, it is observable that certain kinds are producing fairly well in nearly every district; and after travelling through this county (Worcestershire) for many miles, peering into orchards in all directions, I find the best Apples to be Lord Suffield, Cellini, Keswick Codlin, and Devonshire Quarrenden, the last easily distinguished among others by its bright, showy appearance. In every case the trees of this kind are loaded; though not a large Apple, it keeps well till January. Cellini, which seldom fails, can be had in good condition as late as May; I have exhibited them in that month sound and fresh. It is a safe practice to let an orchard consist of dwarf trees, and to plant largely of those hardy kinds which fruit annually without fail. I had charge of a large collection of Apples during a period of ten years, and every season certain kinds bore abundantly, and had to be thinned and propped up by stakes. The credit of such uniform success was however, due, to my predecessor, who had laboured for seventeen years in an untoward northern climate, with an altitude of 300 ft. above the sea, exposed to east and north-east. In the first instance he changed the nature of the ordinary garden soil by means of draining and the addition of large quantities of good loam. The trees were planted above the general ground-level, staked securely, and kept dwarf, averaging about 7 ft. each. Many kinds were planted, proved, and found to be quite unsuitable for the locality; others, which fruited freely, were planted in larger quantities —dozens of some kinds, and often when there were scarcely any Apples in the district, these dwarf trees were loaded. Among the best kinds for the purpose were Stirling Castle, King of Pippins, Northern Greening, Lord Suffield, Aitkin's No. 2, Tower of Glamis, Keswick Codlin, Cellini, Ringer, and Hawthornden. By frequently lifting the roots piecemeal, keeping them well up, giving liberal mulchings, and doing all the pruning in the summer months (leaving little to do in winter), these dwarf trees never were a season out of the ten referred to without bearing a heavy crop of fruit over the average in size. Often when the blossoms seemed entirely destroyed by late frost, hail, and cold rains, the buds, which appeared to be in a dormant state, would burst and set a heavy crop. I have always advocated planting such hardy kinds in great numbers and treating them on the spur system. Last season I planted about 100 maiden trees of these kinds, and numbers are fruiting freely this year. M. T.

Rudbeckia bicolor.—Few gardens are without some representative of this showy genus, but no species with truly annual roots has hitherto been available. In Rudbeckia bicolor this desideratum is supplied. It unites a dwarf branching habit of growth with the effective contrast of colour afforded by a bright yellow ray and blackish purple disc. It grows about 1½ ft. high, having a hairy stem with numerous spreading branches, and oblong, blunt leaves obscurely serrated, the flowers being terminal, on long grooved footstalks, and about 3 in. in diameter, resembling closely those of the well-known Rudbeckia speciosa. The blackish disc is at first globose, but becomes at length conical, the rays consist of from ten to fourteen florets of an orange yellow colour, which continue some time in perfection. A form of this plant exists in which the ray is marked with brown near the base. It is of easy cultivation as a half-hardy annual in any soil, commencing to bloom in July, and continuing in flower till very late in the autumn. As a free-blooming and showy annual it can be recommended to the notice of the horticultural world as well deserving of cultivation. It is a native of Texas.—W. Thompson, *Ipswich.*

THE FLOWER GARDEN.

MUSA ENSETE IN BERKSHIRE.

This stately plant is proving as useful and becoming as popular in our gardens as those who knew it long ago supposed it would become. In sheltered nooks in the southern counties it makes a very fair growth in the summer. We have lately been struck with the health and vigour displayed by some plants of it at Park Place, Henley-on-Thames. Mr. Stanton, the gardener there, raised a batch from seed (obtained through Messrs. Hooper), and it is surprising to notice what noble plants these have become in the course of fifteen months from the time of sowing. They were sown last April twelvemonths, and planted out early in June; they became fine plants during their first summer and autumn. Placed indoors early last October they remained throughout the winter in a warm greenhouse, and were again planted out in June of the present year. They are now forming very fine young leaves as yet rarely injured by the wind, from which they are well protected. The plant is as effective in conservatory or any large glass house in winter as it is out-of-doors in warm places in summer.



Musa Ensete in Berkshire.

ALPINE PLANTS AT HOME.

At the north-east corner of the mighty Matterhorn there rises what in such company one calls a little mountain, though its summit is more than 9000 ft. above the sea-level, named the Hörnli, an outwork of the vast natural fortification which it adjoins; and just below it is a small lake called the Schwarzsee, or Black Lake, with a small chapel close to its edge. On the Schwarzsee shoulder, formed of the shaly *debris* brought down by the melting snow from the Matterhorn and moraine of the glacier, which is the direct road from the lake to the Hörnli, several rare plants grow. Foremost in interest to myself, as having never found it before, was Saxifraga biflora. It grew in considerable quantities amongst the slushy stones and mud, intermingled sometimes with Campanula cenisia. I must own to having been disappointed by it, especially in comparison with its very common kinsman, S. oppositifolia, which on the higher ground round about Zermatt attains a point of excellence, in respect of size of blossom and rich profusion, I have never seen equalled, each little mountain rill being fringed with it so brightly and in such considerable patches, as in spite of the difference of dimensions, to recall the streams of Greece, and their pink ribbon-borders of Oleander. But S. biflora is wanting (such at least as I found it), in the rich colour of S. oppositifolia, and altogether though an interesting flower, there was a pinched ungenial look about it, which conveyed the impression of its having found the difficulties of its struggle for existence too great for it. Campanula cenisia in some degree lays itself open to the same criticism, though there is a neatness and distinctness about its single flowers, which would make it of much value in a collection of Alpine plants, if it can be got to establish itself there—a problem which, from the sort of habitat I found it in (and I may add the present condition of the two or three specimens I brought home with me), I am inclined to answer in the negative. Crepis jubata was another rare denizen of the same locality. I have no knowledge whether it has been ever acclimatised in England; but its single, large, orange flower is bright and showy, and it is so distinct from its allied species as to be well worth trying. But on the same shoulder of which I am speaking grew in some abundance a plant, if not more rare, yet certainly more beautiful than either of the foregoing, and highly prized by those who have carried on the absorbing pursuit of flower-hunting amid the higher elevations of the Alps; I mean Eritrichium nanum, the queen of the Alps, as I heard it designated amongst the flower-loving frequenters of our *table d'hôte*. It is to be found not sparingly on the rocky banks, so to call them, which overhang the loose, shaly soil which made a home for Saxifraga biflora and its companions. It roots itself in the crevices of the rock, or attaches itself to their flatter surfaces, but always—so far as my experience enables me to decide—growing horizontally, and never, as some of its congeners, from vertical chinks. But the Eritrichium of the Zermatt stratifications is not to be compared with its far more perfect form which it assumes on the granite of the Engadine, and probably elsewhere. No words can exaggerate its beauty when it sends its long slender tap-root into a crevice of a granite block, and thence, as I have seen it often, spreads its compact mass of flowers of the loveliest sky blue with scarcely the least intervention of any particle of leaf. On the softer, flaky schist of the Hörnli, the leaves as a rule occupied a large part of the surface, and the brightness of the blue was proportionately toned down. Is it to be cultivated in any degree worthy of its merits in our very different climate? I am not able to answer the question from either experience or observation, but it would be worth any reasonable pains to succeed; and possibly, if plants can be secured in good condition and were established amongst broken granite, fully exposed to sun and air in the summer, and protected by some equivalent for a mantle of snow in the winter, success might be attained. Of another inhabitant of the same stony *débris* as the S. biflora and the rest, and its capacity for naturalization, I can speak with some positiveness, I mean Geum reptans. It grew plentifully amongst the loose shingle; and I know none of the higher Alpines which, if treated kindly, by being planted in grit and loam, with space for the roots to ramble freely in, and abundance of water, will make a more grateful return. The first considerable excursion generally made by ordinary visitors to Zermatt is one of some three or four hours' easy mountain ascent to the Riffel, and thence to the Gorner Grat; the former a well-marked ridge overhanging the little village, the latter an eminence above it of some 10,000 ft. above the level of the sea, affording one of the most perfect panoramas of near snow mountains of the first magnitude to be found in the Alps. As a district rich in botanical treasures, adapted for horticulture, it is probably unsurpassed. To enumerate these would be in part to repeat the names of those assigned to the lower regions of the Matterhorn; a few occur to me which I did not notice when engaged in my explorations there. In the immediate neighbourhood of the little hotel on the Riffel, Lychnis alpina grew in abundance and in great perfection; little compact, rosy plants, which no horticulturist could ever improve in form or habit. It seemed to prefer an exposed western slope, as dry as could be amidst frequent mists and rainfalls, in good turfy loam. I have never seen it in English gardens half so attractive. As we mounted towards the Gorner Grat the loose rocky shingle was studded at intervals with patches of bright-lilac flowers, growing close to the surface, and shading off into white on the one hand and rose-colour on the other, which proved to be Thlaspi alpestre, if not also rotundifolium. I have failed in bringing home specimens in sufficiently good condition to give any reasonable hope of success in cultivating it, and it may help some future collectors if I explain the reason of my failure. On July 18, when, it may be, English people at home were wooing the cooling breezes to mitigate the heat of the dog days, we awoke on the Riffel to a white world up to our very doors. A botanical excursion under such circumstances had a touch of novelty about it. The purple blossoms of Saxifraga oppositifolia were amongst the first to assert themselves; then a tuft of yellow Geum montanum would make itself visible, and so on, till by the time folks in dear old England were sitting down to breakfast the sunshine of those clear mountain heights had stripped away every vestige of the earth's unseasonable covering. But all my plants of that morning's forage have more or less entirely damped off. Though partially dried in my tin box, and then packed separately in paper and dry Moss for home transport, the melted snow had so saturated the balls of earth that all in this one batch amongst all my acquisitions have turned out comparative failures, teaching me the practical lesson as to the real source of danger to plants which are to undergo several days' confinement, not, as most would apprehend, want of moisture, but excess of it. But the distinctive "thing of beauty," to my mind, about the Riffel was the wealth of Androsace Vitaliana, not only colouring the moister yet sunny slopes, but repaying close inspection by its delicacy and fragrance. One serious rival it had, indeed, in a near relative, as unlike it as well could be, both in habitat and general appearance, but still very beautiful, though occurring only scantily, and in the vertical and often overlapped crevices of the steeper rocks—Androsace imbricata. I found this latter very difficult to extract from its crannies, though I see no reason why, when got up unharmed, it should not have all its requirements supplied in a well-made English rockwork. I never realised more than on this excursion the delightful independence of all received arrangements of seasons to which an Alpine landscape may lay claim. A few minutes' walk takes you from midsummer, indicated by the petalless stalks of hundreds of spring-blooming plants, as we should esteem them, in their several degrees of seed-bearing, to the freshest vigour of early spring, where the same plants are bursting into bloom—Anemones, Lloydias, Ranunculuses, Gageas, and so forth—and this not merely in consequence of the greater altitude attained, but of the change from a sunny slope, from which the snows have been early dispelled, to one in fuller shade, where they have lingered. I have said little of the Gentians of the Riffel and its neighbourhood, nor do I know that there is anything distinctive to report about them; I can only confess in general terms that I find it very difficult to discriminate between some of the species which abound on the higher elevations, as G. bavarica, brachyphylla, and imbricata. Sometimes what looks like an inner circle of petals disappears in a great degree in more fully-developed blooms of the same plant, and apparent distinctions of habit are clearly dependent on more or less moisture or exposure. G. bavarica evidently chooses for itself the highest zone, and assumes the deepest colour, while it is the least patient of translation of the three. G. verna readily conforms to English habits, and so, as every one knows, does G. acaulis, and what is apparently often confounded with it, G. excisa. I know nothing of any attempts to naturalize in our gardens the charming little annual, G. nivalis; nor have I ever heard of the cultivation amongst us of another very elegant species (G. utriculosa), which is found in some abundance on both sides of the Zermatt valley, branched like the G. campestris, and of a blue almost as deep as that of G. bavarica. But my store of Zermatt treasures is far from being exhausted, and I have material enough for at least another contribution. Canonicus.

The Edelweiss in Scotland.—"Canonicus," in his interesting remarks on the flora of Zermatt (see p. 125), asks what is to prevent the successful cultivation of the Edelweiss in Britain? There is no great difficulty in cultivating it. Plants which I brought from the Engadine in 1875 have grown and flowered most vigorously, both in frames and in the open air. It does not seem at all fastidious, nor does its culture present any of the difficulties attendant upon that of many of the Alpine Primulæ. The chief point to be attended to is that it should not be shaded or overgrown by earlier and more robust plants, that the drainage be perfect, and care be taken lest it is thrown out during the dormant period, when it shrivels into what looks like a little lump of black, decayed roots and leaves.—Salmoniceps.

August-sown Annuals.—Anybody for a very trifling outlay may have a gay garden next spring by sowing now a few seeds of the following annuals, viz., Nemophila insignis, Collinsia bicolor, crimson and white Candytuft, Saponaria calabrica, crimson and white Godetia, Virginian Stock, white and pink Silene, Limnanthes Douglasi, and Myosotis dissitiflora. It is late for the Myosotis, but it is better to sow late than be without it. I have no occasion to sow this now, for so many self-sown plants come up that one has only to refrain from hoeing them up to have plenty to plant anywhere. Sow thinly either in drills or broadcast in some open situation, and transplant to their blooming quarters early in November, as a good early bloom cannot be ensured by late sowing and late planting.—E. Hobday.

The Globe Artichoke as an Ornamental Plant.—Hans Christian Andersen, in one of his pleasing stories, "The Gardener of the Manor," describes how a flower of this Artichoke, placed on a leaf of the Water Lily floating in a large crystal vase astonished the family of the manor by its beauty and rarity. It is true that a revulsion of feeling set in when they discovered that instead of being the sacred Lotus of Hindostan it was only a common flower from the kitchen garden; yet then the admiration in the first instance was genuine. In good, deep soil, with space enough for development, the Globe Artichoke, either as a single specimen, or two or three together, makes an effective background plant, especially at this season when in flower, and one or two of its flowers placed in a vase with plenty of foliage have a striking effect. The foliage of the various forms of Canna seems also to set them off to good advantage, and they are very lasting in water.—E. Hobday.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Queen Victoria Pelargonium Out-of-doors.—I planted out Pelargonium Queen Victoria last May against an Irish Yew, in light rich soil, and now there is not a more showy Pelargonium in the garden. It has been in bloom ever since it was planted. It is a two-year-old plant, and 2 ft. high.—C. Chisholm, *King's Road, Chelsea.*

Blue Lobelias.—These have been exceedingly effective and continuous this season; the genial rains and moist atmosphere have been more conducive to growth than seed-bearing, and consequently the plants have not been exhausted. A really good selection of L. speciosa makes a most excellent border plant; but for marginal edgings the more compact kind called L. pumila grandiflora is all that can be desired.—J. Groom.

A New Erythronium.—The following description of this plant is by Mr. Sereno Watson, in a recent number of the "Proceedings of the American Academy of Arts and Sciences":—Erythronium purpurascens.—Leaves undulate, oblong to narrowly lanceolate, 4 in. to 6 in. long; scape low, often stout, occasionally divided, racemosely or somewhat umbellately four to eight flowered or more; pedicels very unequal, the upper becoming 2 in. to 4 in. long; flowers light yellow, more or less tinged with purple, deep orange at base; the lanceolate segments spreading, 9 lines to 12 lines long: anthers oblong, 1½ lines to 2 lines long, yellow, on very slender filaments; style thickened above, three-lobed at the summit; capsule erect, narrowly oblong and obtusely triangular, faintly nerved, 1¼ in. long.—E. grandiflorum var. multiflorum, Torrey, Pac. R. Rep. iv. 90; Baker, Journ. Linn. Soc. xiv., 298. In the Sierra Nevada, near Downieville, Sierra Co. (Dr. J. M. Bigelow), and frequent in Plumas Co., whence fine specimens have been received from Mrs. M. E. Pulsifer Ames and from Mrs. R. M. Austin. Abundantly distinct from E. grandiflorum, and a very pretty species, well deserving cultivation.

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 167).

Vines.

(1) *Titania.* Feed him with Apricocks and Dewberries,
With purple Grapes, green Figs, and Mulberries.
Midsummer Night's Dream, act iii., sc. 1.

(2) *Menenius.* The tartness of his face sours ripe Grapes.
Coriolanus, act v., sc. 4.

(3) *Song.* Come, thou monarch of the Vine,
Plumpy Bacchus, with pink eyne,
In thy vats our cares be drowned,
With thy Grapes our hairs be crowned.
Antony and Cleopatra, act ii., sc. 7.

(4) *Cleopatra.* Now no more
The juice of Egypt's Grape shall moist this lip.
Ibid., act v., sc. 2.

(5) *Timon.* Dry up thy Marrows, Vines, and plough-torn leas.
Timon of Athens, act iv., sc. 3.

(6) *Timon.* Go, suck the subtle blood of the Grape,
Till the high fever seethe your blood to froth.
Ibid.

(7) *Touchstone.* The heathen philosopher, when he had a desire to eat a Grape, would open his lips when he put it into his mouth, meaning thereby that Grapes were made to eat and lips to open.
As You Like It, act v., sc. 1.

(8) *Iago.* Blessed Fig's end—the wine she drinks is made of Grapes.
Othello, act ii., sc. 1.

(9) *Lafeu.* O, will you eat no Grapes, my royal fox?
Yes, but you will my noble Grapes, an if
My royal fox could reach them.
All's Well That Ends Well, act ii., sc. 1.

(10) *Lafeu.* There's one Grape yet.
Ibid., act ii., sc. 3.

(11) *Clown.* I was in "The Bunch of Grapes," where, indeed, you have a delight to sit.
Measure for Measure, act ii., sc. 1.

(12) *Constable.* Let us quit all
And give our Vineyards to a barbarous people.
Henry V., act iii., sc. 5.

(13) *Burgundy.* Her Vine, the merry cheerer of the heart,
Unpruned, dies. . . .
. . . . .
Our Vineyards, fallows, meads, and hedges,
Defective in their natures, grow to wildness.
Ibid., act v., sc. 2.

(14) *Mortimer.* And pithless arms, like to a withered Vine
That droops his sapless branches to the ground.
1st Henry VI., act ii., sc. 3.

(15) *Cranmer.* In her days every man shall eat in safety
Under his own Vine what he plants, and sing
The merry songs of peace to all his neighbours.
Henry VIII., act v., sc. 5.

(16) *Cranmer.* Peace, plenty, love, truth, terror,
That were the servants to this chosen infant,
Shall then be his, and like a Vine grow to him.
Ibid.

(17) *Lear.* Now our joy,
Although the last, not least, to whose young love
The Vines of France and milk of Burgundy
Strive to be interessed.
King Lear, act i., sc. 1.

(18) *Arviragus.* And let the stinking Elder, grief, entwine
His perishing root with the increasing Vine.
Cymbeline, act iv., sc. 2.

(19) *Adriana.* Thou art an Elm, my husband, I a Vine,
Whose weakness married to thy stronger state
Makes me with thy strength to communicate.
Comedy of Errors, act ii., sc. 2.

(20) *Gonzalo.* Bound of land, tilth, Vineyard, none.
Tempest, act ii., sc. 1.

(21) *Iris.* Thy pole-clipt Vineyard.
Ibid., act iv., sc. 1.

(22) *Ceres.* Vines with clustering bunches growing,
Plants with goodly burden bowing.
Ibid.

(23) *Richmond.* The usurping boar,
That spoils your summer fields and fruitful Vines.
Richard III., act v., sc. 2.

(24) *Isabella.* He hath a garden circummured with brick,
Whose western side is with a Vineyard back'd;
And to that Vineyard is a planched gate,
That makes his opening with this bigger key:
This other doth command a little door,
Which from the Vineyard to the garden leads.
Measure for Measure, act iv., sc. 1.

(25) For one sweet Grape, who will the Vine destroy?
Rape of Lucrece.

Besides these different references to the Grape Vine, some of its various products are mentioned, as Raisins, wine, aquavitæ or brandy, claret (the "thin potations" forsworn by Falstaff), sherris-sack or sherry, and malmsey. But none of these passages gives us much insight into the culture of the Vine in England, the whole history of which is curious and interesting.

The Vine is not even a native of Europe, but of the East, whence it was very early introduced into Europe; so early, indeed, that it has recently been found "fossil in a tufaceous deposit in the south of France" (Darwin). It was no doubt brought into England by the Romans. Tacitus, describing England in the first century after Christ, says expressly that the Vine did not, and, as he evidently thought, could not grow there. "Solum, præter oleam vitemque et cætera calidioribus terris oriri sueta, patiens frugum, fæcundum." Yet Bede, writing in the eighth century, describes England as, "opima frugibus atque arboribus insula, et alendis apta pecoribus et jumentis Vineas etiam quibusdam in locis germinans."

From that time till the time of Shakespeare there is abundant proof not only of the growth of the Vine as we now grow it in gardens, but in large Vineyards. In Anglo-Saxon times "a Vineyard" is not unfrequently mentioned in various documents. Edgar gives the Vineyard situated at "Wecet, with the Vinedressers" (Turner's "Anglo-Saxons"). Domesday Book contained thirty-eight entries of valuable Vineyards; one in Essex consisted of six acres, and yielded twenty hogsheads of wine in a good year. There was another of the same extent at Ware. (H. Eversbed, in "Gardener's Chronicle.") So in the Norman times, "Giraldus Cambrensis, speaking of the Castle of Manorbeer (his birthplace), near Pembroke, said that it had under its walls, besides a fish-pond, a beautiful garden, enclosed on one side by a Vineyard and on the other by a wood, remarkable for the projection of its rocks and the height of its Hazel trees. In the twelfth century Vineyards were not uncommon in England" (Wright).

In the time of Shakespeare, I suppose that most of the Vines in England were grown in Vineyards of more or less extent, trained to poles. These formed "the pole-clipt Vineyards" of No. 21, and are thus described by Gerarde—"The Vine is held up with poles and frames of wood, and by that means it spreadeth all about and climbeth aloft; it joyneth itselfe unto trees, or whatsoever standeth next unto it"—in other words, the Vine was then chiefly grown as a standard in the open ground.

There are numberless notices in the records and chronicles of extensive vineyards in England, which it is needless to quote; but it is worth noticing that the memory of these Vineyards remains not only in the chronicles and in the treatises which teach of Vine-culture, but also in the names of streets, &c., which are occasionally met with. There is "Vineyard Holm," in the Hampshire Downs; the "Vineyard Hills," at Godalming; the "Vines" at Rochester and Sevenoaks, the "Vineyards" at Bath; and probably a closer search among the names of fields in many other parts would bring to light many similar instances.*

Among the English Vineyards those of Gloucestershire stood pre-eminent. William of Malmesbury, writing of Gloucestershire in the twelfth century, says:—"This county is planted thicker with Vineyards than any other in England, more plentiful in crops, and more pleasant in flavour. For the wines do not offend the mouth with sharpness, since they do not yield to the French in sweetness" (De Gestis Pontif., book iv.). Of these Vineyards the tradition still remains in the county. The Cotswold Hills are in many places curiously marked with a succession of steps or narrow terraces; these are traditionally the sites of the old Vineyards, but the tradition cannot be fully depended on, and the formation of the terraces has been variously accounted for. By some they are supposed to be natural formations, but wherever I have seen them they appear to me too regular and artificial; nor, as far as I am aware, does the oolite, on which formation these terraces mostly occur, take the form of a succession of narrow terraces. There seems nothing improbable in the idea that the ground was formed into these terraces with very little labour, and that they were utilised for some special cultivation, and as likely for Vines as for any other. It is also certain that as the Gloucestershire Vineyards were among the most ancient and the best in England, so they held their ground till within a very recent period. I cannot find the exact date, but some time during the last century there is "satisfactory testimony of the full success of a plantation in Cromhall Park, from which ten hogsheads of wine were made in the year. The Vine plantation was discontinued or destroyed in consequence of a dispute with the rector on a claim of the tythes" (Rudge's "History of Gloucestershire"). This, however, is not quite the latest notice I have met with, for Phillips, writing in 18-0, says:—"There are several flourishing Vineyards at this time in Somersetshire; the late Sir William Basset in that county annually made some hogsheads of wine, which was palatable and well-bodied. The idea that we cannot make good wine from our own Grapes is erroneous; I have tasted it quite equal to the Grave wines, and in some instances, when kept for eight or ten years, it has been drunk as hock by the nicest judges" ("Pomarium Britannicum"). It would have been more satisfactory if Mr. Phillips had told us the exact locality of any of these "flourishing Vineyards," for I can nowhere else find any account of them. At present the experiment is again being tried by the Marquis of Bute, at Castle Coch, near Cardiff, to establish a Vineyard, not to produce fruit for the market, but to produce wine; and as both soil and climate seem very suitable, there can be little doubt that wine will be produced of a very fair character. Whether it will be a commercial success is more doubtful, but probably that is not of much consequence.

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* I shall feel much obliged to any reader of The Garden who would inform me of any places named after the Vine.—H. N. E.

I have dwelt at some length on the subject of the English Vineyards, because the cultivation of the Vine in Vineyards, like the cultivation of the Saffron, is a curious instance of an industry foreign to the soil introduced, and apparently for many years successful, and then entirely, or almost so, given up. The reasons for the cessation of the English Vineyards are not far to seek. Some have attributed it to a change in the seasons, and have supposed that our summers were formerly hotter than they are now, bringing as a proof the Vineyards and English-made wine of other days. This was Parkinson's idea. "Our yeares in these times do not fall out to be so kindly and hot to ripen the Grape to make any good wine as formerly they have done." But this is a mere assertion, and I believe it not to be true. I have little doubt that quite as good wine could now be made in England as ever was made, and wine is still made every year in many old-fashioned farmhouses. But foreign wines can now be produced much better and much cheaper, and that has caused the cessation of the English Vineyards. It is true that French and Spanish wines were introduced into England very early, but it must have been in limited quantities, and at a high price. When the quantities increased and the price was lowered, it was well to give up the cultivation of the Vine for some more certain crop better suited to the soil and the climate, for it must always have been a capricious and uncertain crop. Hakluyt was one who was very anxious that England should supply herself with all the necessaries of life without dependence on foreign countries, yet, writing in Shakespeare's time, he says:—"It is sayd that since we traded to Zante, that the plant that beareth the Coren is also broughte into this realme from thence, and although it bring not fruit to perfection, yet it may serve for pleasure, and for some use, like as our Vines doe which we cannot well spare, although the climat so colde will not permit us to have good wines of them" ("Voiages," &c., vol. ii., 165). Parkinson says to the same effect—"Many have adventured to make Vineyards in England, not only in these later days but in ancient times, as may well witness the sundry places in this land, entituled by the name of Vineyards, and I have read that many monasteries in this kingdom having Vineyards had as much wine made therefrom as sufficed their covents year by year, but long since they have been destroyed, and the knowledge how to order a Vineyard is also utterly perished with them. For although divers both nobles and gentlemen have in these later times endeavoured to plant and make Vineyards, and to that purpose have caused Frenchmen, being skilfull in keeping and dressing Vines to be brought over to perform it, yet either their skill faileth them or their Vines were not good, or (the most likely) the soil was not fitting, for they could never make any wine that was worth the drinking, being so small and heartlesse, that they soon gave over their practise."

There is no need to say anything of the modern culture of the Vine, or its many excellent varieties. Even in Virgil's time the varieties cultivated were so many that he said—

> Sed neque quam multæ species, nec nomina quæ sint
> Est numerus; neque enim numero comprendere refert;
> Quem qui scire velit, Lybici velit æquoris idem
> Discere quam multæ Zephyro turbentur arenæ;
> Aut ubi navigiis violentior incidit Eurus
> Nosse quot Ionii veniant ad littora fluctus.
>
> *Georgica* ii., 103.

And now the number must far exceed those of Virgil's time. "The cultivated varieties are extremely numerous; Count Odart says that he will not deny that there may exist throughout the world 700 or 800, perhaps even 1000 varieties; but not a third of these have any value" (Darwin). There are the Grapes that are grown in our hothouses; some also of a fine quality are produced in favourable years out-of-doors. There are besides these a few which are grown as ornamental plants. The Parsley-leaved Vine (Vitis laciniosa) is one that has been grown in England, certainly since the time of Shakespeare, for its pretty foliage, its fruit being small and few; it makes a pretty covering to a wall or trellis. The small Variegated Vine (Vitis or Cissus heterophyllus variegatus) is another very pretty Vine, forming a small bush that may be either trained to a wall or grown as a low rockwork bush; it bears a few Grapes of no value, and is perfectly hardy. Besides these there are several North American species, which have handsome foliage, and are very hardy, of which the Vitis riparia or Vigne des Battures is a desirable tree, as "the flowers have an exquisitely-fine smell, somewhat resembling that of Mignonette" (Don). I mention this particularly, because in all the old authors great stress is laid on the sweetness of the Vine in all its parts, a point of excellence in it which is now generally overlooked. Lord Bacon reckons "Vine flowers" among the "things of beauty in season" in May and June, and reckons among the most sweet-scented flowers, next to Musk Roses and Strawberry leaves dying, "the flower of the Vines; it is a little dust, like the dust of a bent, which grows upon the cluster in the first coming forth." And Chaucer says—"Scorners faren like the foul toode, that may noughte endure the soote smel of the Vine roote when it flourisheth" ("The Persone's Tale").

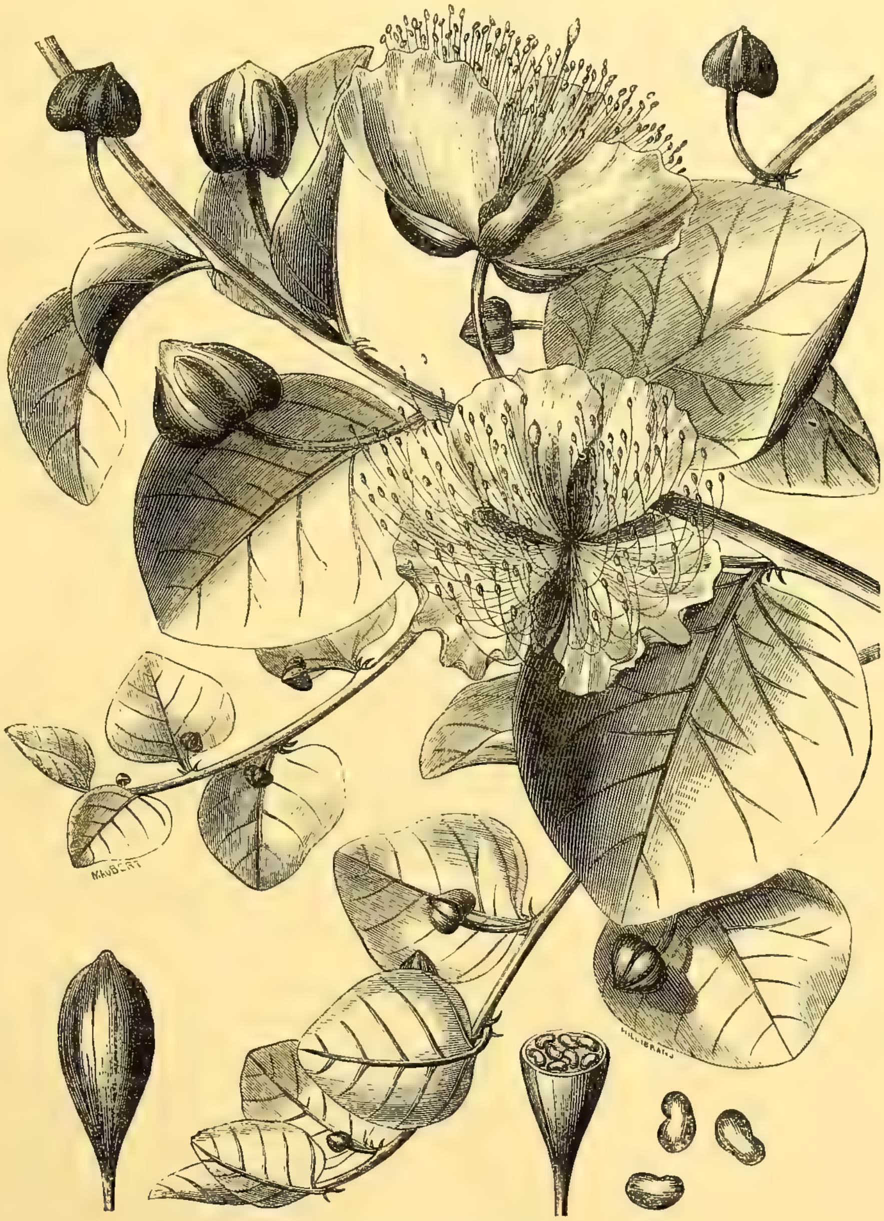
Nor must we dismiss the Vine without a few words respecting its sacred associations, for it is very much to these associations that it has been so endeared to our forefathers and ourselves. Having its native home in the East, it enters largely into the history and imagery of the Bible. There is no plant so often mentioned in the Bible, and always with honour, till the honour culminates in the one great similitude, in which our Lord chose the Vine as the one only plant to which He condescended to compare Himself—"I am the true Vine!" No wonder that a plant so honoured should ever have been the symbol of joy and plenty, of national peace and domestic happiness. H. N. Ellacombe.

(To be continued).

Phellodendron amurense, a very hardy ornamental tree, flowered last season at the Cambridge Botanic Garden. It has been there fifteen years, so it is quite hardy. The plant is diœcious, and a native of Mandschuria. It grows in its native habitat at 50ft. high, and has a trunk 1 ft. thick, with a corky bark. It is allied to Ptelea and Xanthoxylon. Prof. Sargent contributes a fuller note on the subject to the April "American Naturalist."

CAPER PLANTS.

Regarded in the light of ornamental plants, Capers do not rank highly in the estimation of many; nevertheless several species, as well as those of allied genera, are cultivated for the sake of their large and showy flowers. Most of the Capers are plants of a shrubby nature, and are characterised by two little recurved spines seated at the bases of the leaves. The fruit is elevated upon a long gynophore, and the mark or scar of the fallen petals is very distinct as the fruit ripens. Irrespective of any interest the plants may have in themselves, the history of some and the uses of other species are of sufficient importance to justify a few words about them. It was at one time endeavoured to be proved by Dr. Royle that the Hyssop of Scripture was identical with the common Caper (Capparis spinosa); but the identification of biblical plants is a subject upon which writers and commentators have differed so widely that great doubts exist as to this as well as to other plants. The Caper plant grows abundantly in the south of Europe, on the shores and in the islands of the Mediterranean; besides being found naturally in these countries growing on walls and rocks, it is also cultivated to a great extent, as well as in many parts of France, Italy, and Sicily; and it is from the last-named country that we get our principal supply of Capers. The flowers, as will be seen from the annexed figure, are borne on single stalks rising from the axils of the leaves, the petals being of a delicate light pink colour, and the numerous stamens longer than the petals; the flower-buds form the Capers of commerce, which are so well known as a pickle, and as an ingredient in Caper sauce. In some parts, however, the young fruits are used in a similar way. The plants begin to



The Caper Plant in Flower.

flower in the early part of the summer and continue flowering almost successively till the beginning of the winter, or for a period of six months. The flower-buds, which are gathered while they are in a very young state, are plucked every morning and thrown at once into casks of salt and vinegar. This harvesting goes on during the whole flowering period, and at the end of the season the Capers are sorted carefully by hand, according to size and colour; those of the smallest size and of the brightest green are considered the best, and are known as Nonpareils, the second quality being called Capucines; these are again put into vinegar in small glass bottles, and after being securely fastened down, are packed in cases for exportation. Those packed in barrels are those that are left remaining after the above selections have been made, and fetch a lower price.

Capparis spinosa, under several distinct varieties, is found in many parts of India—in the Punjab, Scinde, Guznar, north-west Himalaya, &c., ascending in the inner arid valleys to an elevation of 12,000 ft. Dr. Brandis says that in India the time of flowering varies according to the locality and elevation. In the Peshawur valley and the trans-Indus territory it flowers from April to July, the fruit ripening about November, while in the inner Himalaya it flowers from June to October. The shrub is described as being in India strikingly handsome, owing to its large flowers, long purple stamens, and the long-stalked ovary protruding from among them. The buds are not used in India as they are in Europe, though there is no reason why they should not be, as the plant flowers freely. The fruits, however, are pickled and eaten both in Scinde and the Punjab. Goats and sheep are particularly fond of the leaves and ripe fruits. We have flowered the Capparis spinosa freely in a large pot of light soil, with brick rubbish intermixed. This Caper is, however, very difficult to grow in this country. There probably would be least difficulty in growing it on the back wall of a greenhouse—its roots being in the wall, as they so often are where it grows wild.

Capparis aphylla is a branched, glabrous tree or shrub with brownish-red or scarlet flowers borne in lateral and terminal fascicles or corymbose racemes. It is very common in India through the Punjab, Scinde, Rajputana, the central provinces, the Dekkan, also in Tinnivelley, and North-west India in the driest, hottest places, extending into Arabia, Egypt, Nubia, and North Central Africa. The wood is of a lightish yellow colour, very hard, close and fine-grained, and has a distinctly bitter flavour, which protects it from the attacks of white ants. It is used in India for agricultural implements, rafters for houses, ribs for boats, &c. It burns quickly with a good deal of flame, and leaves a quantity of ash; throughout Borneo in North Central Africa a salt is prepared from this ash which is largely used for culinary purposes. It is remarkable that while the flower-buds of the true Caper are not pickled in India, those of C. aphylla are so used in Scinde, while the unripe fruits are cooked and eaten, and in both the ripe and unripe states they are prepared with salt and pepper, and made into a pickle which has a strong bitter taste, and is exported into Hindustan. This plant is the Capparis Sodada of Robert Brown, and is known in India as the Karil or Kiral, in Arabia as the Sodada, in Sinai as Lasaf, and in Central Africa as Suag.—J.

A Portable Hot-water Boiler.—Good, portable hot-water boilers, that can be easily shifted about from place to place, have not been common. We note that one exhibited at the Centennial Exhibition by Smith & Lynch, of Boston, received from the judges the following award, which is highly creditable:—1. Saddle-shaped boiler with good-sized fire-box, the interior surface of which is furnished with a series of deep, narrow water-cells, projecting towards the fire, giving a large amount of fire surface, insuring prompt and efficient action and consequent rapid circulation of water. Construction simple, strong, and portable; amply supplied with fittings which are readily adjusted; an excellent heater. 2. Adaptability to secure a combination of hot-water and flue heating, thereby economizing the products of combustion. —W. D. Brackenridge, Signature of the Judge. Approval of Group of Judges—George Thurber, William Saunders, F. Pentland.—"Gardeners' Monthly."

A man who has not much experience of garden-work suggests that for laying-out and trenching, which he has lately tried, a cast-iron back with a hinge in it would be an improvement on the spinal column now in use. He is of course an American.

ADJUSTABLE PLANT BOXES.

Various contrivances have been proposed to allow boxes in which plants are grown to be taken away from the balls of earth, so as to permit the plants to be set in the ground without disturbing the roots; and among these we have seen none so well adapted to secure this end as an adjustable plant box, invented by Mr. C. M. Crandall.

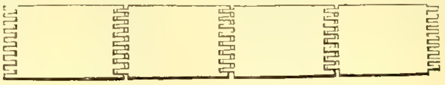


Fig. 1.

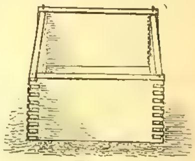


Fig. 2.

Pieces of thin board, with dove-tailing, are used for the sides; four of these are put together and fastened by pivots as in fig. 1. It is but the work of a few seconds to put these into the shape of fig. 2, when the box is complete. As many boxes as are desired are set together upon a board, which serves as a bottom to all of them. They are then filled with earth, and are ready for the plants. In a short time the earth gets so solid, and is so held by the roots of the plants, that the box may be lifted, or may be taken quite away from the ball of earth, which will retain its shape. The readiness with which the plants may be transferred from the boxes to the open ground may be seen at once, and the plants are not at all disturbed by the operation. One advantage of these boxes is their durability, and when not in use they may be laid flat, as in fig. 1, tied together, and put away for another season. If one chooses to make a lighter box, it can be done by uniting two in the manner shown in fig. 3, and they are susceptible of a variety of combinations, as shown in fig. 4; and others will suggest themselves to those who may wish to use them for a miniature window-box.—"American Agriculturist."

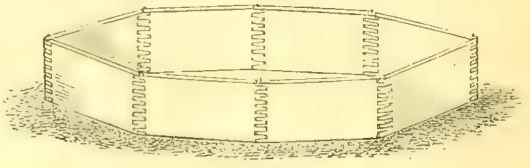


Fig 3.

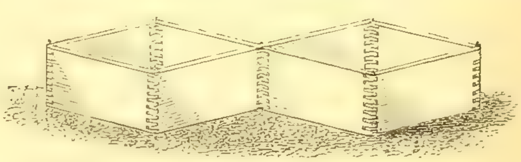


Fig. 4.

Cooked Radish Pods.—I sowed this spring a small border with Radish seed, but owing to the bad soil of a London garden, and the ungenial weather, they produced no roots fit to pull. In order, however, to have a few pods for pickling I allowed them to stand, and in consequence of the quantity of pods produced, I had a few of them cooked as an experiment in the same way as French Beans, when to my surprise I found them equal to marrow Peas, and very similar to the small Asparagus sold in Covent Garden under the name of "Sprue." In future I shall always, after those fit for pulling are used, leave the remaining plants for this purpose. A useful property belonging to Radishes is, that should the border be wanted for other purposes, they may be transplanted without any fear of failure.—H. L.

Fly on Brussels Sprouts.—A small white-winged fly which attacks the Cabbage tribe in great numbers is thus got rid of by Kentish market gardeners:—An old sack is procured, and to each side of it is fastened a broomstick or strip of wood, to one of these is also fastened another piece of sacking about 1 ft. wide which hangs down and is called a flapper; one side of the sack (but not the flap) is painted over with gas tar, and with one person on each side of the bed of plants, this sack is stretched tightly and drawn along about 12 in. or 15 in. above the plants, the flapper dragging over the plants and disturbing the insects, which fly upwards and stick to the gas tar. After this operation has been performed a few times, a bed of plants half a mile in length is entirely freed from the pests. The gas tar requires to be renewed several times during the operation.

THE FRUIT GARDEN.

EARLY PEARS.

Amongst early Pears, to which allusion has already been made (see p. 107), Williams' Bon Chrétien (fig. 1) must have a foremost place, being one of the largest and most delicious. It is also a sure bearer; even this season, when other kinds are so scarce, it is producing a full crop. It generally comes into use about the end of August, but this season it will not be ready until the middle of September. Like most kinds of early Pears it will not keep long after it is ripe, and it is quite spoiled if allowed to ripen on the tree. Doyenné Boussoch (fig. 2), is another good early Pear, which generally comes into use about the middle of September; it has a richly-perfumed flavour, and for an early kind keeps a considerable time after being fully ripe; with us it bears best on the Quince stock. Ananas de Courtrai (fig. 3) is another excellent early Pear, which is not so generally grown as it should be; it is always as large as Williams' Bon Chrétien, and sometimes larger, and it resembles that kind in having a strongly-perfumed flesh, though more brisk and refreshing; it is not such a free bearer as Williams' Bon Chrétien, but it must not by any means be classed amongst shy-fruiting sorts. Other good August and September Pears are—Beurré de l'Assomption, Dearborne Seedling, Souvenir du Congrès, Ambrosia, and Madame Treyve. W. W. H.

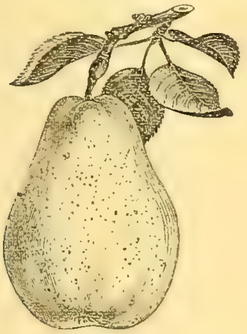


Fig. 1.—Williams' Bon Chrétien.

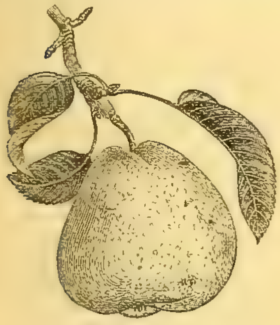


Fig. 2.—Doyenné Boussoch.

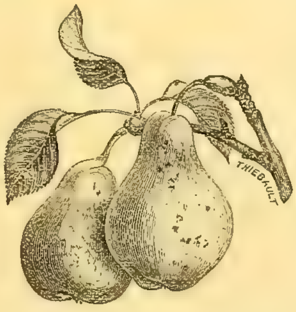


Fig. 3.—Poire Ananas de Courtrai.

Figs in the Open Air.—This is the time for laying the foundation for a good crop next year, by keeping the shoots thin and well exposed. Well-ripened wood will pass through a severe winter with only a slight protection, where soft immature shoots would be killed. All young fruits now showing should be pinched off before they get any size, as they can never become useful, and only tend to exhaust the trees. Figs in the midland counties usually make more wood than they do in the South; therefore more attention must be given to summer pruning, and it may in some situations be occasionally necessary—unless the roots are growing in some circumscribed position—to lift and shorten their points. Rigid training is not necessary as regards fruitfulness, and in some instances it may have quite a contrary effect, but in many gardens neatness and order are essential requisites; therefore Fig trees against walls or buildings have to submit to training whether it suits them or not: if the shoots be kept thin and laid in close to the walls, the extra warmth radiated from the bricks will help to ripen the wood. It is in cases in which the shoots are laid in so thickly that every inch of surface is densely covered with foliage that failure occurs. It would be far better to leave trees altogether untrained than to train the branches so thickly that neither air nor sunshine can have fair play. The Brown Turkey and White Marseilles are two of the best varieties.—E. Hobday.

The Phylloxera and its Changes.—At the August meeting of the Society of Inquiry held in the Museum, Thornhill, Dr. Sharp gave an account of the recent increase of knowledge regarding the Phylloxera. M. Lichtenstein, of Montpellier, and other observers had succeeded, he said, in overcoming the difficulties connected with so small an insect beneath the surface of the ground, and had made out its history, though some points still remained to be cleared up. It is certain, however, that the Phylloxera is as interesting to the man of science as it is to the Vine-grower, for it exhibits a series of changes which are without any parallel in the animal kingdom. The successive generations, instead of resembling one another, differ much, and after a number of generations have been produced by wingless females, a winged form appears, and by it insects in a stage of development corresponding to that of the chrysalis are produced instead of eggs being laid, and then from these chrysalids are at once produced the sexed individuals; these sexed individuals are, however, extremely peculiar, for they are very much smaller than the individuals of the preceding generations, and are completely without the organs of the mouth that would enable them to take food. M. Lichtenstein considers this series of changes to be analogous to cycles that are frequent in the vegetable kingdom.

A Successful Cool Orchard House.—A conviction has been growing up in the minds of many fruit cultivators of late that cool orchard houses, *i.e.,* houses without artificial heat, are not trustworthy, and that from want of warmth frost penetrates the structure and cripples the crop just when it looks full of promise. This has unfortunately happened; but still there are exceptions to this rule. At Dawpool, Birkenhead, the residence of Mr. T. H. Ismay, there is a cool orchard house, which was built some fifteen years ago on the Cranston principle. It is 81 ft. in length, 21 ft. in width, and 14 ft. in height. It is a span-roofed house standing by itself, with one side to the south-west, facing the sea, which is about a mile distant. The trees, which consist of Figs, Cherries, Plums, Peaches, Nectarines, and a few Reinette de Canada Apples are all potted, and are growing in pots about 15 in. in diameter, plunged in the soil about two-thirds their depth. Mr. D. Bryers, the gardener at Dawpool, states that during the fifteen years that have elapsed since the trees were purchased they have never missed carrying a crop, and this year, every tree is so heavily weighted with fruit as to be in danger of breaking down. Plums are especially plentiful; and the Cherries, which are now gathered, were an abundant crop. Vines are cultivated on the roof, the varieties being the Black Hamburgh and Dutch Sweetwater, the bunches of which are of good size, with well-developed, finely-coloured berries. The trees have been fifteen years in their pots without having been re-potted; but a top-dressing of rich soil is given them every year in October, and at the time of fruiting they are supplied with guano water. No special precautions are adopted to exclude frost beyond shutting up the house during the time it lasts. The position of the house is, however, elevated and dry, and the aspect warm and sunny. It will, therefore, be seen that where conditions are favourable unheated orchard houses are structures worthy the attention of fruit growers.—D.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Ripening the Wood of Fruit Trees.—The growth of fruit trees being now pretty well finished for the year, all laterals or breastwood remaining should be removed, to allow the free access of air and sunshine to the main leaves on the spurs or branches from which a crop is expected next year. This will also at the same time improve the colour and flavour of the fruit now approaching maturity.—E. Hobday.

Another Use for Grapes.—Grapes will be abundant this year in California, and a few Grape-growers who have the Mission variety will adopt the plan of fattening hogs on them, unless prices are good. Mr. Mertes says one of his neighbours, Mr. Gould, has tried the experiment thoroughly, and is perfectly satisfied with the results. Hogs will fatten as well on Grapes as on corn. They eat ravenously when first turned into the Vineyards, but soon become fat, and spend most of their time sleeping under the Vines, too fat to run about. They neither destroy the Vines nor waste the Grapes, but pick up all that drop on the ground, and the feed lasts much longer than one would suppose who has never tried the experiment. From the time Grapes are ripe until after frost the supply holds out unless the number of hogs is disproportionate to the size of the field. Two or three hogs can be kept several months on each acre.

PLATE LXXXVIII.

THE HERBACEOUS PHLOXES

(WITH A COLOURED FIGURE OF PHLOX BEAUTY OF EDINBURGH).

Drawn by H. HYDE.

Of neglected plants, the Phlox is one of the most striking examples, and when one considers with what ease it can be propagated and cultivated, it is surprising that so little use has hitherto been made of it. It can be freely propagated in spring in a little heat, and in summer and autumn in a cold frame or even in the open border, and it will withstand our most severe winters. It will grow in any good garden soil, but is much improved by the addition of some well-rotted manure; and if the beds or clumps can be mulched with the same material the plants will be thereby much invigorated, their season of flowering lengthened, and the quality of the flowers improved. By planting the early and late-flowering varieties alternately, the same beds can be kept gay for nearly four months. After the plants have begun to grow, all weak and superfluous shoots should be removed, leaving three or four only of the most vigorous on each plant. Herbaceous Phloxes produce a pleasing effect planted amongst Rhododendrons or other shrubs, and they can be obtained at a mere fraction of the cost of Gladioli, Lilies, and similar plants. Many of them are even useful for conservatory decoration, as, in addition to their other good properties, some of them are delightfully fragrant. They can be grown in 8-in. or 10-in. pots plunged in the open ground, treated like Chrysanthemums, and taken in as required; for this purpose, two-year-old plants are most suitable.

Summer-flowering Phloxes.

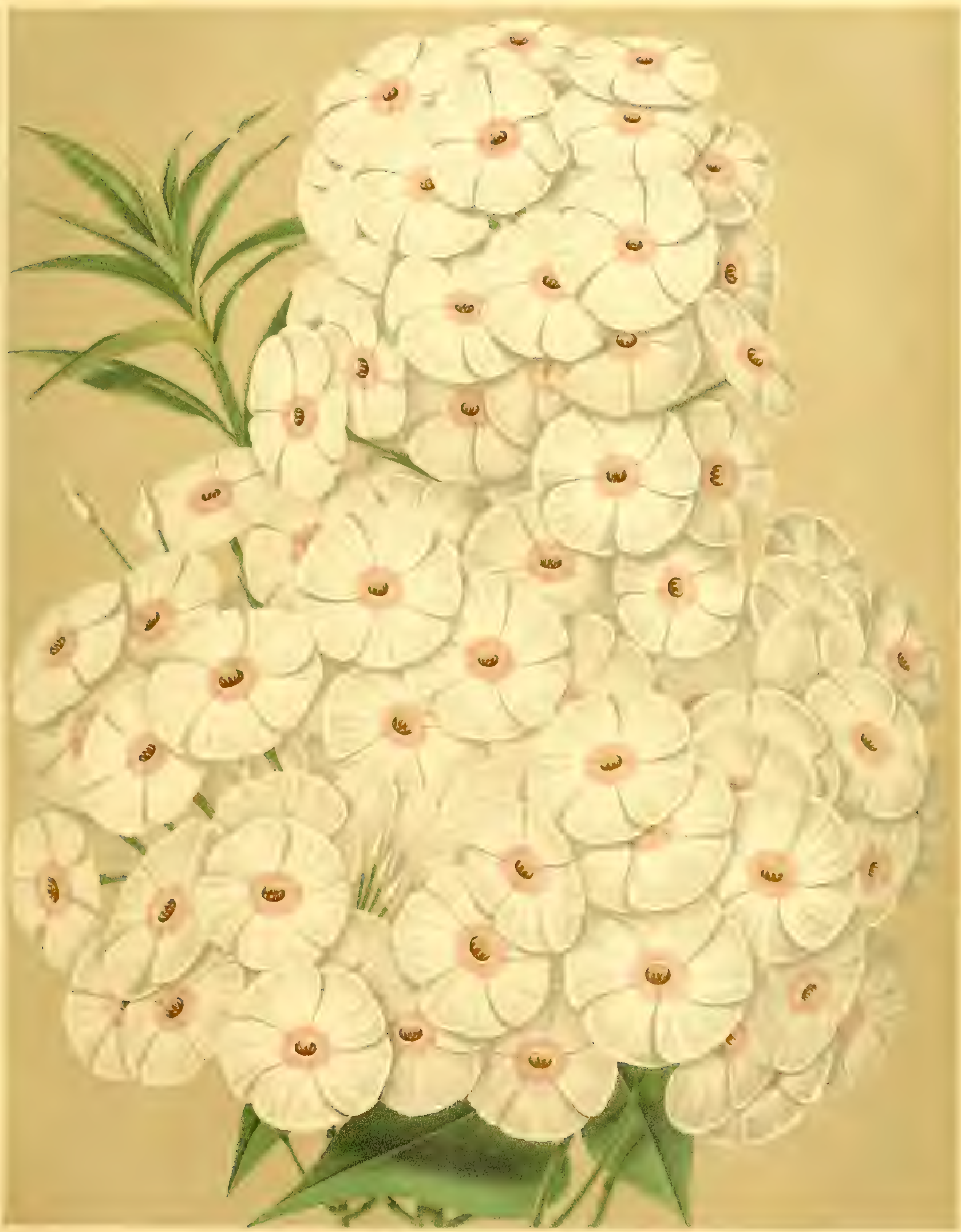
The summer-flowering Phlox, P. suffruticosa or nitida, although introduced to this country from Carolina as early as 1818, exhibited no marked improvement until nearly forty years later; but from that time so much attention has been paid to it, especially in the North, that it has now, one would suppose, almost reached perfection. While in the original the individual flowers had small narrow petals, and were produced so thinly as scarcely to show the outline of a spike, the most recent seedlings have massive spikes built up of large circular flowers so closely arranged as to overlap each other, and of sufficient substance to stand the weather well. The accompanying plate, somewhat reduced, represents a remarkably perfect example of a seedling sent to us by Messrs. Dicksons & Co., Waterloo Place, Edinburgh, which, for size and form of flower and arrangement of spike, is as perfect as a Phlox could well be expected to be. This section is extremely useful in the herbaceous border in June and July, when it is in flower, coming as it does between the spring and autumn-flowering sorts. The following are the names of twenty-four of the finest Phloxes for competition at present in cultivation (if only twelve be grown, those named first will be found the best):—Beauty, Beauty of Edinburgh, Bridesmaid, Conqueror, Caller Ou, George Eyles, James Nicholson, Mrs. P. Guthrie, Mrs. Burton, Mrs. Gellatly, Philip Pollock, William Mitchell, Allan Mc Lean, Dr. Robert Black, Duchess of Athole, Indian Chief, Mary Shaw, Mrs. Ritchie, President, Redbraes, Socrates, The Bouquet, The Deacon, and The Shah. While the number of competition varieties might be much extended, any one requiring Phloxes for park decoration might find it desirable to reduce the number to three or four having clear and distinct colours, large spikes, and a robust and vigorous habit of growth; and for this purpose we have seen large clumps of the following produce a charming effect, viz.:—Bridesmaid, pure waxy white; Dr. Robert Black, red; Mrs. P. Guthrie, white with dark lilac eye; and Mrs. Ritchie, rosy purple.

Autumn-flowering Phloxes.

The late or autumn-flowering Phlox, P. decussata or acuminata, was introduced from North America a few years earlier than the P. suffruticosa, but it appears to have long been neglected by growers in this country, probably on account of its tall habit and lateness of flowering, and we are entirely indebted to Continental raisers for having taken it up and improved it, especially as regards colour. It has been only within the last ten or twelve years that English cultivators have paid special attention to this section, being dissatisfied partly with the quality of flowers sent out, so many of the new Continental varieties being quite inferior to those already in the market, and also because many of the finer varieties proved too delicate in constitution and their flowers too thin to stand our autumn rains. British hybridizers, having already all the best Continental kinds, directed their attention first to improving the constitution and habit of the plants, then to obtaining earlier blooming varieties, having flowers of good substance and form. The result of this care has been most satisfactory, as we have now got flowers possessing all the qualities of which many of the imported varieties were deficient. No doubt many of the Continental varieties, when seen at home, are very beautiful; but for our less favourable climate we require flowers of a more enduring character. The time of flowering of this section immediately succeeds that of the suffruticosa group, thus prolonging the season at least two months from the end of July. They are remarkable for their exceedingly bright and varied colours, including all shades from rich vermilion to pure white, some also being beautifully striped. A selected list of twenty-four of the best and most distinct varieties for competition in this section are as follows, the first twelve being the finest, viz.:—coccinea, David Syme, Gavin Greenshields, Jane Welsh, Jenny Grieve, Lothair, Matthew Miller, Mrs. Keynes, Monsieur Rafarin, Rêve d'Or, Robert Paterson, William Blackwood, Andrew Borrowman, Carnation, Henry Cannell, James Alexander, James Cocker, Madame Verlot, Major Molesworth, Miss Wallace, Mrs. Tennant, Thos. Chisholm, Triomphe du Parc de Neuilly, and William Veitch. For large beds, back lines of borders, or for park decoration, the following are the most effective varieties, and can be used according to the shades of colour required, viz.:—coccinea, rich vermilion; Carnation, white and spotted with purple; James Alexander, rich crimson; Lothair, bright scarlet; Mrs. Keynes, pure white; Robert Paterson, rich crimson; William Blackwood, rosy salmon; Miss Wallace, pure white; and Major Molesworth, scarlet, with a crimson eye. G.

STRIKING CAMELLIAS FROM LEAVES.

It would be hard, indeed, to pronounce with absolute certainty what exogenous plant exists which will not grow from a cutting, provided the cutting be a portion of the axis, and that it be planted under favourable conditions. That numbers of the same great division of the vegetable kingdom may be propagated even from leaves is an interesting fact which of late years has been still more abundantly established by the skilful operators of our time. It is not so very long since leaf-propagation was a thing scarcely dreamed of, and when the only instance familiar or known to us was that afforded by the so-called Life Plant (Bryophyllum calycinum), the leaves of which, if laid upon a surface of soil, sand, or tan, produced a young plant from each of the crenatures. This, however, could scarcely be with strictness called a leaf cutting. The Gloxinia was, perhaps, the first plant which showed the capacity for emitting roots from, every cut or fractured portion of the stalk, or framework of the leaf. Then the succulent section of Begonias, of which B. Rex is the type, showed themselves to be so accommodating in this respect that a leaf might be cut up piecemeal, and the least fragment would emit roots and produce a plant. Zonal Pelargoniums were then found to be quite amenable to leaf-propagation, and, later still, ingenious manipulators have discovered that even the Fuchsia and small Melastomads are no churls in this respect. Further examples might be given, but the foregoing are sufficient to show that, at all events in the case of plants of a soft, succulent character, even the leaf may be calculated upon to grow a plant from. In the case of hard-wooded plants the matter is very different, and one would scarcely expect to find a hopeful subject for propagation in the leaf of any of them. And yet we are about to bring before our readers a very remarkable, if not altogether novel, instance of it. One would scarcely expect that in the Camellia we could have a subject for leaf-propagation. Yet such is a fact, of which only a few days since we had ocular demonstration in the propagating house at Glasnevin, where we saw several Camellia leaves with quite a bushwood of roots from their foot-stalks luxuriating in the Cocoa-nut refuse which formed the striking medium. To Mr. Buckley, who has charge of this department, and who is a most successful and intelligent manipulator, is due the credit of being the first (so far as we are aware) to demonstrate that Camellias may be struck from a leaf.—"Irish Farmer's Gazette."

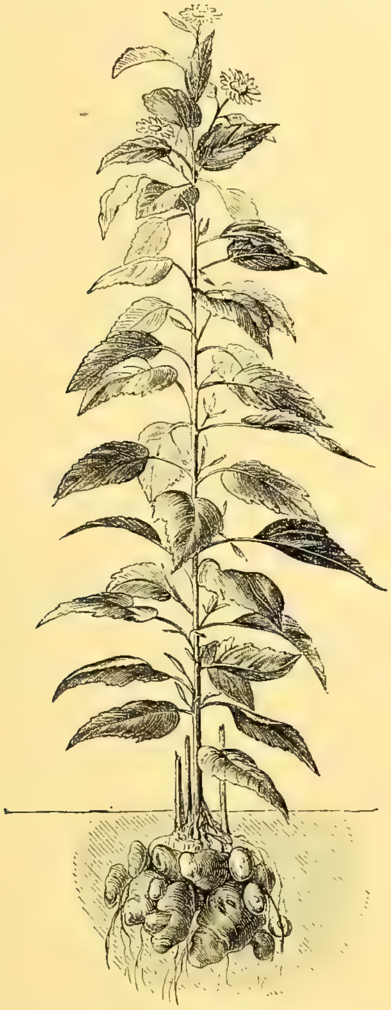


PHLOX "BEAUTY OF EDINBURGH."

THE KITCHEN GARDEN.

JERUSALEM ARTICHOKES IN FLOWER.

In this country the Jerusalem Artichoke only flowers in warm situations and in exceptionally hot seasons. Its blossoms resemble those of the Sunflower, to which the plant is closely related. On the Continent its tubers are always in considerable demand, and before the Potato became plentiful they were a good deal in use in this country. Parkinson, writing in 1629 says they were then common in London. Hence it appears that, as the culture of the Potato extended it gradually displaced the Jerusalem Artichoke, and at the present time the latter is only grown to a very limited extent in gardens. Since the failure of the Potato crops the Jerusalem Artichoke has been strongly recommended as a substitute for that vegetable, but notwithstanding all that has been said and written in its favour, it is still far from common, and by no means esteemed so much as it deserves to be. S.



Flowering specimen of Jerusalem Artichoke.

Thinning Late Turnips.—To have well-shaped hardy Turnips to stand for winter use, plenty of space should be allowed them. Veitch's Red Globe and Orange Jelly—two of the best Turnips for all seasons, should be thinned to 15 in. apart. The Black and White Stones, which are also good for late sowing, will not need so much room: for those kinds a square foot will be sufficient. —E. Hobday.

Lettuce and Endive to stand the Winter.—In cold bleak situations a considerable advantage is gained by planting these on sloping banks or ridges with the longest inclination to the south. They should be formed in some open airy place, and being well drained, if at the approach of frosty weather the Lettuces and Endive be covered with dry Fern or Oak leaves, they would not be so likely to suffer from damp, and would blanch readily and be very crisp.—E. Hobday.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Evergreen Hedges, such as Holly, Yew, Laurel, Privet, or anything that is kept cut into a formal shape, and that have attained the full size to which they are required to grow, should now be clipped; there is no better time than the present for carrying out such an operation; where this work is delayed until near the close of the year and a severe frost ensues, the shoots are frequently killed back for some distance beyond where cut. In the case of any hedges of this description that are to be so far reduced in size as to necessitate cutting back into the strong wood that has become destitute of leaves, the work should not be done until spring, as the roots would be thereby seriously affected at this season of the year, and whatever little growth was made after this time would be so soft as to be unable to live through the winter; in like manner young Evergreen hedges should not be cut until spring, further than shortening back with the knife any over-strong shoots that are taking too much lead. In respect to young hedges of this description, I should by all means urge their being kept wide at the bottom and gradually reduced up to the top, which should be kept quite narrow. The old-fashioned form of hedge, with its perpendicular sides and square or rounded top, finds more favour with some on account of its general appearance, but there is no hedge (if we except Beech) that will ever retain its full strength in the lower branches where most needed, when cut in this way.

Deciduous Hedges, in and around gardens where it is desirable to keep up an orderly, trim appearance, and which have attained the full size required, may also now be clipped. Young thriving hedges that are not yet fully developed should on no account be cut until after the leaves have fallen, as the removal of the shoots of anything of a deciduous habit whilst the leaves are upon them has a most weakening influence, and has a far more disastrous effect upon the plants than the cutting away of the same shoots after the leaves have fallen. I frequently see amateurs so desirous of keeping everything so close and formal as to be induced to cut Thorn hedges twice in the year, that is, just before midsummer, and again in the autumn or winter; but it must be borne in mind that, except in the case of the most vigorous examples of this kind of fence grown under the most favourable conditions of soil and situation, this continual clipping, from its exhaustive tendency, will in the end permanently injure the hedge.

Box Edging.—Where this was not clipped in the spring it should now be done. There is nothing equals this edging in appearance when it is not allowed to get too large, and from its natural slow habit of growth, with ordinary care in cutting, many years will elapse from the time of planting before this occurs. When it has once attained sufficient size, like a well-managed hedge, it should annually be cut back to the same point to which it had been previously clipped; by being so treated at first sight it might be supposed that it would have for a time after cutting a bare look, through the old leaves in the course of time falling off; but this does not occur, as when cut close the old stems keep breaking out lower down and are always furnished with fresh green leaves.

Lawns and Shrubberies, &c.—Through the late abundance of rain lawns in even the driest parts of the country have kept their verdure much better than usual, and, as after this time there is no danger of their getting burnt up, in those places where the mowing machine was set early in the summer so as to leave the grass a moderate length, it may now be adjusted to cut a little closer, which will render the lawn more pleasant to walk upon when at all damp. In places where Dandelion, Plantain, or other weeds which usually affect lawns were numerous and cut out in the spring, the showery season will have been favourable to their again springing up: if they have made their appearance cutting out should be again resorted to, otherwise the labour already incurred will be lost, as by the spring they will be almost as strong as ever, whereas if persistently removed as often as they appear their destruction is certain, as no plant, including those weeds most tenacious of life, can bear incessantly cutting down so low as to remove the crown. I often meet with amateurs who, on coming into possession of gardens that have been neglected, express a feeling that in trying to exterminate weeds, especially on gravel walks, they have undertaken a hopeless task, yet such is by no means the case, provided the work is always done in time. Where one crop of weeds succeed another without any diminution, it gives evidence of mistaken ideas as to their reproductive capabilities; those who have not had much experience in gardening matters are frequently under the impression that the seeds of weeds, like those of cultivated crops, require to be ripe or nearly so, previous to removal from the parent plant, to enable them to grow; yet this is by no means the case, for the seeds of great numbers will grow almost as soon as they are formed, while those of an annual character in a very few days after their flowers are dead will be possessed of germinative vitality; hence there is no safe way but removing them as soon as they are sufficiently large with either hoe, or fingers.

Kitchen Garden.—All Potatoes for seed are much benefited by being fully exposed in the open air; the effect of such treatment is that the sprouts formed through the winter and spring previous to planting have a natural tendency to be much stouter, and consequently less liable to be broken off or injured in the operation of planting than when the Potatoes to produce the next year's crop have on taking up been at once stored without being subjected to this greening process; but in thus letting them remain in the open air it is necessary to keep a sharp look-out, for from the first commencement of the disease I have always found that any Potatoes that are exposed, even if quite sound when taken up, soon become affected with it; to such an extent has this occurred that on one occasion, with a beautiful lot of Mona's Pride that were dug before there was the semblance of disease in the neighbourhood, by letting them lie on the surface of the ground for some weeks (during which time it made its appearance) they were so affected that I did not save five per cent. of the whole. After being greened in the manner described, I should recommend all Potatoes intended for seed being put away in any cool building, as clamping in all cases possible should be avoided; even those that are intended for planting will be none the worse for being stored in a totally dark place, as although they can hardly have too much light after they begin to sprout, yet until there is a disposition thus to commence growth, they are just as well in the dark. The later varieties, especially the rank-growing American kinds, have in many places been attacked by the disease; if the weather continue dry, in all probability it will not seriously affect these later sorts; but if wet weather ensue, I should recommend amateurs to look over the tops every few days, and, as soon as ever they detect the leaves turning black instead of dying off the natural yellow colour, at once pull up the haulm; the disease is first apparent on the under leaves and stems, and if these be removed before it has attacked the tubers, the latter may be allowed to remain in the ground to ripen for a few weeks previous to being taken up. When this pulling up of the tops (cutting off will not do) is carried out on the first symptoms of disease in the leaves, I have invariably found it effectual; but it is not of the slightest use after the tubers are affected to any considerable extent. Many object to removing the tops in a green state, under the impression that the quality of the produce is injured thereby; they will not be quite so dry and mealy when cooked as if the tops had died down naturally when non-affected with disease, but their keeping properties will not be impaired in the slightest degree; and it is better to submit to the little deterioration in quality that thus occurs than to sacrifice the bulk of the crop.

Planting Coleworts, &c.—Whatever ground is cleared from Potatoes or other crops should immediately be planted with Coleworts, late Green-curled Kale, or other hardy vegetables for winter and spring. If plants of these have been prepared by pricking out in a nursery bed, they will have attained a considerable size, and if removed with no more mutilation of their roots than can be avoided, and sufficiently watered until their roots have got hold of the soil, they will grow on through the cooler autumn months to a useful size; or, if preferred, a portion of ground newly cleared may still be devoted to Turnips, as there is yet time, especially in the south and west of the kingdom, for them to attain a fair size before winter.

Runner Beans, planted with a view to keep on bearing so long as the frost will permit them, should have the ground well mulched with manure; this will have the effect of giving the requisite nutrition to the roots to enable the plants to continue bearing; without such treatment, in late, mild autumns they get exhausted before the arrival of frost.

Dwarf French Beans.—Where these are held in estimation, and are required to keep on bearing as late as they can be had, those that were sown late must have the first Beans they produce picked off as soon as they are fit for use, or their ability to continue making the necessary growth will be curtailed; to assist them in this, good soakings of manure water will be found the most effective, for even where the ground has been well enriched with solid manure liquid stimulants are of service by acting immediately upon the roots.

Peas.—In open situations, where there is a chance of growing for late gathering without their becoming affected with mildew, a little manure put on as a mulching for about 2 ft. on each side of the rows and well soaked with water will keep up the vigorous growth essential to late bearing.

Endive.—A good breadth of ground should be now prepared whereon to plant the principal crop of Endive for autumn use; do not plant too closely—18 in. between the rows and 15 in. between the plants in the rows will not be too much for the stronger-growing kinds, such as Batavian and Large Green; the small French Curled will do closer, but in all cases leave sufficient room for the use of the hoe.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

August 27.—Sowing Black-seeded Brown Cos, Stanstead Park and All the Year Round Lettuces; Fraser's Broad-leaved and Green-curled Endive. Manuring and digging borders for Endive and Lettuce. Earthing up Celery and Cardoons when the soil is dry and in suitable condition. Gathering ripe Peaches, Nectarines, Pears, Figs, and Plums, and putting them away in a dry, cool place to keep as long as possible. Watering Pines, newly-planted Strawberries, Endive and Lettuce.

Aug. 28.—Sowing Intermediate Stocks and Red and White Turnip Radishes. Potting off Mrs. Pollock and other Tricolor Pelargoniums. Staking Laxton's Unique Peas. Thinning Spinach. Clearing out a pit ready for Cucumbers. Looking over Cucumbers and Melons, stopping their shoots, and removing dead leaves, &c. Watering Vine borders, Peach trees, Scarlet Runner Beans, and Carrots.

Aug. 29.—Sowing Sweet Basil for winter use and Mustard and Cress in succession. Putting in cuttings of Viola Blue Perfection and Golden Gem under handlights against north wall. Planting a small breadth of Leeks for spring use. Thinning out Vegetable Marrows, and closely stopping their shoots. Filling in all Cauliflower drills, giving them a good earthing. Forking over the ground between Cabbage plants. Gathering Green Gage Plums and Morello Cherries for preserving. Watering late-sown Peas, Dwarf Beans, Celery, Endive, and Lettuce.

Aug. 30.—Sowing Turnips. Putting in cuttings of Heliotropes, Cupheas, and Ageratums. Transplanting Wallflowers, Antirrhinums, and Cauliflowers. Giving all Peach and Nectarine trees a good syringing where the fruit is gathered. Gathering Tomatoes and Devonshire Quarrenden Apples. Spawning a new Mushroom-bed and preparing more manure for another. Digging up ground previously occupied by Peas for planting with Coleworts. Giving Peach trees from which the fruit has been gathered a good soaking with water at the roots.

Aug. 31.—Potting off Fuchsias, Verbenas, and Cucumber plants. Putting in cuttings of Salvia splendens and Lobelia pumila. Cutting back and nailing Roses on walls. Clearing off Peas and heavily manuring the ground, afterwards digging it up roughly to remain through the winter. Gathering Victoria Plums and Noblesse Peaches for preserving. Thinning Turnips, Spinach, and Lettuce. Watering Pines, late-planted Strawberries, Cauliflowers, and Carrots.

September 1.—Potting seedling Cyclamens. Planting Endive and Lettuce under the walls. Weeding Strawberries and cutting off the runners which were laid in pots. Emptying and refilling the Grape bottles with spring water with a little charcoal added. Cutting and stacking away turf. Gathering Lord Suffield Apples and Jargonelle Pears. Watering Cauliflowers, late-planted Celery, Lettuces, and Endive. Fruit in use for dessert—Pines, Grapes, Peaches, Nectarines, Pears, Figs, and Plums.

Hardy Flowers.

Carnations and Picotees.—Layering, the principal means by which the propagation of these is effected, should now be pushed on without delay. For convenience in carrying out the operation, and indeed for general safety, Carnations and Picotees are grown in large pots, and when that is the case, layering is an easy matter, and it can be performed without exposure to weather, for the plants in pots can be carried into a shed and the work performed in comfort. Mr. E. S. Dodwell, the foremost authority in the matter of Carnations and Picotees, states that it is most important not to proceed with the work until the layers are ripe, and it is equally important not to delay it until they have become hard. The necessary shading of the flowers (when the plants are grown to supply blooms for exhibition purposes) usually causes the layers to become somewhat drawn and soft, and in order to harden them, the plants must be fully exposed to the sun as soon as the bloom has faded. Some sorts produce a good quantity of Grass, others but very little, and sometimes these spare producers include the best varieties. "Remove from each layer the leaves up to the third joint, counting from the top, which can generally be easily effected with a slight horizontal rift; but if the layers be soft, a pair of sharp scissors must be used," or else there is danger of the shoot snapping asunder. Next "remove all dead and decaying leaves, and about an inch of the old soil from the surface; the latter should be replaced with a compost consisting of equal parts of turfy loam, leaf-mould, and clean sand, which must be well incorporated and passed through a fine sieve. Take the layer between the left forefinger and thumb, hold it firmly, and thrust the point of the layering knife partly through the second or third joints, as the layer may be more or less firm; bend up the top until the joint thus cut opens freely; press it gently into the soil, and secure it firmly there by means of a peg. The pegs for which I have a preference are those made from the common Fern, which if cut in the autumn when thoroughly matured, and used with an ordinary degree of care, will last two seasons. Pegs made from a partly-worn Birch broom also do exceedingly well. When finished, water slightly with a watering-pot, to which a fine rose has been attached. It may also be well to mention here that as water can only be supplied through a fine rose after the layering is completed, it is needful to take care that the ball of soil be made thoroughly moist before commencing to work. Carefully shelter from brilliant sunshine and heavy winds until the rooting process has commenced." There are, however, many plants growing in borders, and when these are layered, the soil should first of all be loosened about the plants, and some fine soil added, as in the case of plants in pots, and into this the layers should be pegged. In the case of outdoor plants, it is a great advantage to layer as early as possible, so that the layers may become well rooted by autumn. In cases where the Grass is high up the stem of the plant, it may be necessary to use pots of soil for layering.

Large-flowering Chrysanthemums.—The leading shoots of these, whether in pots or in the open ground, should be kept securely tied out. The plants must be well watered in dry weather, and a little liquid manure once a week onwards will be found of great advantage. The Pompone varieties should now be stopped for the last time without delay; it should be done by the first week in August. Plants in pots are greatly helped by tying out the shoots so as to admit a free circulation of air; they must be also well watered, as the foliage quickly turns yellow when the plants suffer from drought. Sprinkling overhead night and morning is of great service: at this time of year green fly is apt to infest the points of the shoots—a washing with Fowler's Insecticide will soon dislodge the enemy.

Cinerarias.—There are certain named varieties of Cinerarias that can only be propagated by means of cuttings or offsets, and there are promising seedlings that it is desirable to increase in the same way. At this season of the year the plants throw up offsets from the base of the main stem, and these, which may perhaps be more truthfully termed "suckers," should be carefully taken off with as many roots as possible adhering to them, potted off singly into 3-in. pots, and kept close for a time in a cold frame and shaded from the sun. The suckers that are not rooted are best put into store pots and kept close in a similar matter. While the suckers are rooting and making growth they require to be kept clear from green fly, damp, and mildew. The growing plants should be shifted into larger pots as they increase in size.

Phlox Drummondi.—The cool, moist weather which we are now experiencing is greatly prolonging the beauty of this showy annual. The seed-pods should be picked off so as to encourage the production of flowers, with the exception of the very best varieties, which should be allowed to carry a truss or two of seeds so as to furnish something good to sow next spring. A few cuttings could also be taken of the best varieties, as these would make capital plants for blooming in pots next summer.

D.

Three Feet of Fern-spores.—Bureau and Poisson have examined a substance found in large quantities in a cave at Reunion Island. The cave is 10 metres in depth by 6 metres square, and is covered to a depth of more than a metre by a yellow, soft, insipid, inodorous substance, which crumbles under the fingers to an impalpable powder. The dry powder burns without flame or odour, but when moistened gives off during combustion much smoke and the odour of a burning plant. By exclusion they have decided that this matter consists of the spores of species of Ferns, probably Polypodiaceæ. The spores are not those of Lycopodiaceæ, according to the writers, but they have the shape, markings, and colour of the spores of the Polypodiaceæ with large fronds now occurring on the island.

The flavour of Narbonne honey is said to be caused by the bees feeding on the flowers of the common Rosemary.

TREES AND SHRUBS.

THE SPIRÆAS.

By GEORGE GORDON, A.L.S., Author of "The Pinetum."

These are for the most part shrubs well suited for planting in the open border, as they grow freely in any good garden soil; they flower profusely, and are very distinct both as regards habit of growth and time and manner of flowering, as some produce their blossoms early in spring, others late in autumn. Their flowers are also produced in various ways, some in corymbs, and others in erect, compound, blunt heads or spikes; some are likewise pure white, while others are of a brilliant red or pink colour. Some few of the plants are rather tender, but the greater part are perfectly hardy. One of them (Reevesiana) is evergreen or sub-evergreen, and the leaves of the whole of them are either simple or pinnate.

Flowers in Thyrsoid Racemes or Spicate Panicles.

Willow-leaved Spiræa (S. salicifolia).—This forms an erect-growing dense bush, 4 ft. or 5 ft. high, with numerous smooth shoots which arise mostly from the ground; the leaves, which are lanceolate, are smooth, doubly serrated, and tolerably large; the flowers are red or rose-coloured, and disposed in dense, blunt thyrsoid racemes; the carpels are in fives, and smooth, and the lobes of the calyx triangular and spreading. This is a native of Siberia, Tartary, Silesia, and Bohemia, and it flowers in July and August. This kind is also found in England, but in that case it has pale flesh-coloured flowers, and bears the name of Spiræa carnea; there is also a white-flowered variety of it which bears the name of Spiræa paniculata, and which is a native of North America, Canada, and Newfoundland, but it in no way differs from the European one, except in the white colour of its flowers and the red colour of its branches. It is the Spiræa salicifolia alba and S. canadensis of collections, and the following are only wild forms of salicifolia, viz., S. incarnata, S. urticifolia, and S. carnea.

Tomentose Spiræa (S. tomentosa).—This forms a somewhat erect, stout shrub, from 4 ft. to 5 ft. high, with shoots and leaves (the latter on the under sides) clothed with a rusty-coloured tomentum. The leaves, which are ovate, are serrated towards the apex and entire near the base and deep green above; they are of medium size and have short foot-stalks. The flowers, which are small, are of a beautiful red colour and are disposed in large, dense, terminal, compound racemes; the lobes of the calyx are tomentose on the outside, triangular, and deflexed; the carpels are in fives and divaricate. It is a native of the mountains of Canada and many other places in North America, and it flowers in August and September. The Spiræa Tobolski is the same as this, and the S. Douglasi only a variety of it with less rusty leaves, which are more oval, less pointed, and broader. The flowers are in more open heads and less compact. It is a native of the north-west coast of North America.

Menzies's Spiræa (S. Menziesi).—This forms a dense, erect, bushy shrub 3 ft. or 4 ft. high, with quite the habit of the Willow-leaved one, bearing upright, rod-like shoots, which spring mostly from the ground every season. The branches, which are erect, are pubescent at the points and downy as regards the pedicels and calyx. The leaves are oblong or elliptic, coarsely serrated towards the apex and smooth above, but silvery-white beneath. The flowers, which are borne in large, crowded, terminal, oblong-obtuse panicles, are bright red and small, with the stamens twice the length of the corolla. It is a native of the north-west coast of North America, and flowers from June to August. It is sometimes named S. californica in collections.

Noble's Hybrid Spiræa (S. Nobleana).—This is a robust, erect, bushy shrub, with a great portion of the shoots rising from the ground, from 3 ft. to 4 ft. high. The branches, in the matured state, are smooth, but downy when young. The leaves, which are rather large, sometimes 4 in. long, are regularly lanceolate, very sharp pointed, tapering towards the base on very short stalks, and coarsely and acutely serrated beyond the middle; they are quite entire at the base, bright green and smooth above, and hoary-grey beneath. The flowers are borne in dense, blunt, branching, terminal, distinct, oblong racemes on longish foot-stalks, and of a pale red colour. It is a hybrid and flowers in July and August.

Hornbeam-leaved Spiræa (S. carpinifolia).—This is a robust, erect, open shrub, which grows from 4 ft. to 6 ft. high, with straight, stout, rod-like branches; the leaves oval-elliptic, acute at both ends, coarsely serrated on the edges, and glabrous. The flowers, which are borne in large, terminal, racemose panicles, are white. It is a native of North America, and flowers in August. This is the Spiræa obovata and salicifolia latifolia, and a very distinct kind it is on account of its flowering so late in the season.

Mountain Spiræa (S. alpestris).—This forms a low-spreading, somewhat slender shrub from 2 ft. to 4 ft. high, with lanceolate, acute, finely-toothed leaves, which are sharply serrated almost to the base, and canescent. The flowers, which are in large, loose, terminal, thyrsoid racemes, are pale red or pink, and nearly double the size of those of the Willow-leaved kind. It is a native of Siberia, where it is found on rocks, and it flowers from June to September. This is the Spiræa grandiflora of Loddiges' "Botanical Cabinet," and the salicifolia grandiflora of Loudon.

Taurian Spiræa (S. taurica).—This is a tall, upright, fastigiate shrub, from 6 ft. to 8 ft. high, with lanceolate, serrated leaves and small white flowers in panicled racemes, which are produced very early in spring. It is a native of the Taurian Mountains, and is the same as S. ulmifolia scopa of Loddiges.

Flowers in Loose Terminal Cymes.

Shady Spiræa (S. umbrosa).—This is a low, procumbent shrub seldom more than 1 ft. high, which flourishes best in the shade of other plants. The leaves are rather large, but variable in size, some of the larger ones on the stronger shoots being from 2 in. to 3 in. long and from 1 in. to 1½ in. broad, while those on the slender lateral shoots are comparatively small and finely serrated; they are broadly-ovate, obtuse, doubly and acutely serrated towards the apex, with a few coarse teeth, entire at the base, slightly tapering, smooth on both surfaces, bright green on the upper surface and pale beneath. The flowers, which are small, are borne in large, loose, terminal, smooth, branching cymes, sometimes 3 in. across, and composed of numerous small, dense heads of white flowers set on long, slender foot-stalks. It is a native of Northern India, and flowers in July and August.

Expanded-flowered Spiræa (S. expansa).—A robust, erect, dense shrub, 4 ft. or 5 ft. high, with an even-flowering head, composed entirely of spreading, loose, long-stalked, corymbose panicles. The leaves are rather large, strictly lanceolate, acutely and coarsely serrated on the upper part, entire, and slightly tapering to the base, set on longish foot-stalks, dull yellowish-green on the upper side, and glaucous beneath, quite smooth on both sides when fully matured, and tapering to a long, slender, sharp point. The flowers, which are rather small, are set on very long, slender foot-stalks, branching into large, expanded, open panicles, composed entirely of flowers of a pale red or pink colour. It is a native of Nepaul, and flowers in August or even later. It is often confounded with S. callosa.

Whortleberry-leaved Spiræa (S. vaccinifolia).—This forms a neat, small, spreading shrub about 2 ft. high, with slender, thread-shaped, smooth, and extended branches. The leaves, which are rather small, are ovate serrulated at the apex and glaucous beneath. The flowers, which are white, are borne in rather small, terminal, tomentose, compact cymes. It is a native of Nepaul, and flowers in July and August; this is the same as S. adiantifolia.

Lax-flowered Spiræa (S. laxiflora).—This forms a slender, weak-branched, spreading shrub, 2 ft. high, very much resembling S. vaccinifolia as regards size and form of leaves, and glaucous colour on their under sides; but they are long-stalked, rather glaucous above, with long, taper-pointed serratures towards the apex. The flowers, which are arranged in large, loose, shaggy panicles, have reflexed petals, and are white. It is a native of Northern India, and flowers in July; this is the S. vaccinifolia of Loddiges' "Botanical Cabinet."

Pretty-flowered Spiræa (S. bella).—This is a loose-growing, branching shrub, with reddish, smooth stems, 3 ft. or 4 ft. high. The leaves, which are ovate, acute, smooth, and serrated, are set on longish foot-stalks, thin, and whitishly tomentose on the under side. The flowers are terminal, spreading in pubescent corymbs loosely disposed, and of a beautiful rose-colour; the calyx is deflexed, and the carpels in fives and shining. It is a native of Nepaul, and flowers in May and June. There is a white-flowered variety of this called S. bella alba and S. callosa alba, in which the flowers are much larger and in looser cymes. It is a native of Japan, and flowers in August.

Callous-leaved Spiræa (S. callosa).—A loose, branching shrub from 3 ft. to 4 ft. high, with rather large, smoothish, lanceolate, acutely-serrated, stalked leaves, tapering to both ends, and glaucous beneath; the stems, calyxes and peduncles are villous; the flowers are in terminal, branching corymbs, and of a deep red colour. It is a native of Japan and flowers in August. This is the same as S. Fortunei; and S. syringæfolia, a hybrid produced between it and S. bella alba, is distinguished by its dwarf habit, and numerous large heads of pink flowers.

Flowers in Loose Panicles.

Split-leaved Spiræa (S. fissa).—This forms a stout, erect shrub, 8 ft. or 10 ft. high, with angular, downy branches, and smallish leaves, which are smooth on the upper surface, and furnished on the under sides with extremely fine, close down; the leaves are lax, ovate-incise, and wedge-shaped at the base, with the lateral incisions, when young, usually split into a pair of unequal and very sharp teeth, but when the plant is old the leaves are much smaller and less serrated; the flowers are arranged in long, loose, terminal panicles, and are tomentose, with the petals small and greenish-white. It is a native of Mexico, and flowers in May and June. This kind is rather too tender for planting in the open border; it is the Spiræa argentea of Bentham.

Whitebeam-leaved Spiræa (S. ariæfolia).—This forms a free-growing, dense, erect, bushy shrub, from 6 ft. to 8 ft. high, with elliptic-oblong leaves, broadest at the base, more or less deeply lobed, and villous on the under sides; the leaves are pale green, smooth above, and clothed beneath with a whitish tomentum, toothed on the edges of the lobes, and set on long foot-stalks; the flowers are in large, terminal, slender-branching panicles, which are white and villous; the lobes of the calyx are acute and spreading, and the carpels in fives, reddish, compressed, and hairy. It is a native of the north-west coast of North America, and flowers in June and July, or later. Spiræa discolor is the same as this.

Pubescent Spiræa (S. pubescens).—A small, grey shrub, about 2 ft. high, with little hemispherical umbels of pure white flowers, which are set on longish, terminal stalks; as regards foliage it has the appearance and the habit of a weak Spiræa ariæfolia; its leaves are ovate-oblong, somewhat three-lobed, unequally, coarsely, and acutely serrated, broad and entire at the base, quite smooth on the upper surface, and covered beneath with a short, dense tomentum, which becomes cinnamon-coloured as it grows old; the foot-stalks are rather long and, like the young wood, downy, while the uppermost leaves, beneath the umbels, are oval or oblong and less lobed than the others; the carpels are in fives and pilose. It is a native of China, particularly about Chusan, and flowers in April. It is rather too tender for planting in the open border.

Smooth Spiræa (S. lævigata).—This forms a stout, spreading shrub, from 2 ft. to 4 ft. high, very dissimilar in appearance from any of the other kinds. The leaves, which are rather large, are obovate-oblong, perfectly smooth, glaucous, quite entire, stalkless, and tipped with a small mucro at the apex; the flowers, which are white, are disposed in thyrsoid, racemose panicles, with the branches of the panicles cylindrical, and the bracteas linear and hardly the length of the calyx; the segments of the calyx are also triangular and ascending. It is a native of Siberia in valleys, at the foot of the more lofty of the Altaian Mountains, and flowers in May. It is the same as Spiræa altaiensis and altaica.

Fortune's Panicled Spiræa (S. Fortunei paniculata).—This, though a hybrid, is well worth attention. It is a plant which, like its female parent (S. Fortunei), thrives in almost every soil and aspect. The leaves are serrated, unequal, and pointed; the flowers, which are larger than those of the type, are of a deep rose colour. The accompanying woodcut was prepared from a specimen growing in M. Billard's nursery at Fontenay-aux-Roses.

Flowers in Hemispherical Corymbs or Loose Umbels.

Germander-leaved Spiræa (S. chamædrifolia). — This is a slender, bushy shrub which grows from 2 ft. to 3 ft. high, and which has ovate leaves acutely pointed, deeply serrated at the apex, set on long foot-stalks, pubescent and pale beneath. The flowers, which are white, are disposed in hemispherical corymbs on slender elongated stalks. It is a native of Siberia, and blossoms in June and July. It is a kind which in its wild state varies considerably, the Canadian Spiræa media (which has obovate, rather villous leaves, with few teeth at the apex) and the Hungarian Spiræa oblongifolia (which has oblong-lanceolate leaves narrowed at the base and deeply serrated at the apex), being the most distinct.

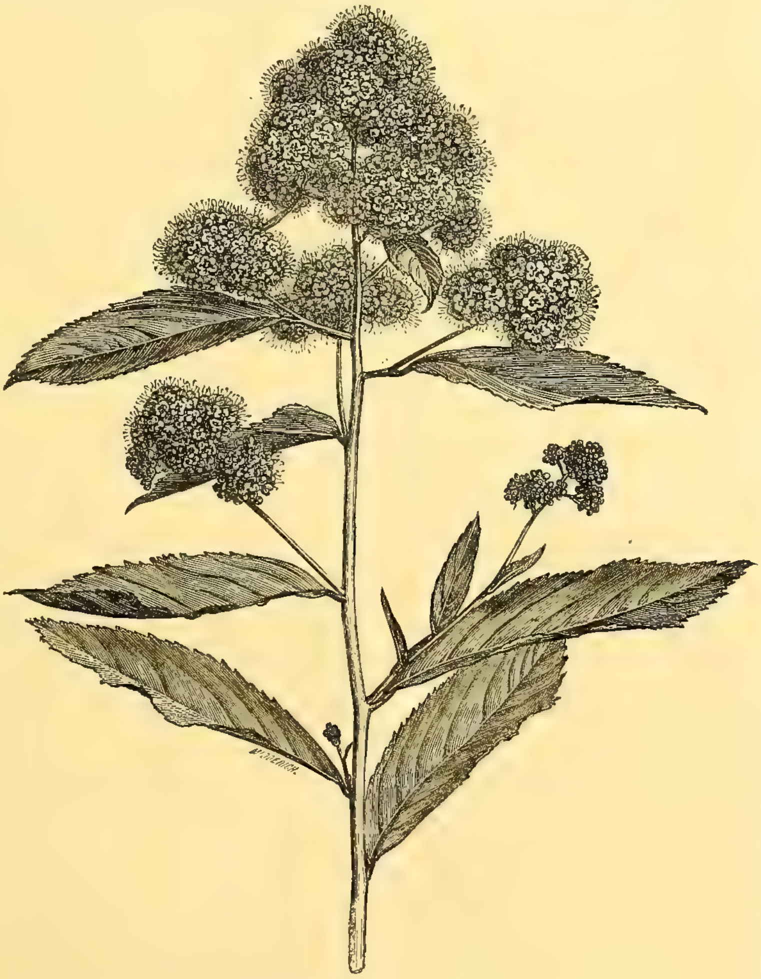
Elm-leaved Spiræa (S. ulmifolia).—This forms a dense twiggy bush 3 ft. or 4 ft. high, with broad ovate-lanceolate leaves, acute at the point, flat on the upper surface, sharply and coarsely serrated, set on long foot-stalks rounded at the base, and smooth in the adult state; the flowers, which are white, and placed on long stalks and terminal, sub-hemispherical corymbs, are quite round in the bud state, but when fully expanded have reflexed petals. It is a native of Siberia, and flowers in June and July. This is the S. chamædrifolia of Loddiges and Lindley.

Alpine Spiræa (S. alpina).—This forms a shrub 2 ft. or 3 ft. high, with long rod-like shoots, which are somewhat flexuose, light-brown, and little divided; the leaves are lanceolate, narrow, acute, set on short foot-stalks, tapering much to both ends, and coarsely and acutely serrated towards the point, entire near the base, and smooth on both surfaces; the flowers, which are white and terminal, are in stalked corymbs with ascending petals. It is a native of the Siberian Alps in woods, and flowers in June. This kind is easily distinguished by its long, narrow leaves.

Flexuose-branched Spiræa (S. flexuosa). — This is a tall, slender-growing shrub, 5 ft. or 6 ft. high, with long flexuose shoots. The leaves, which are lanceolate and pointed, are coarsely toothed from the middle to the apex; the flowers, which are arranged in rather large corymbs, are white, and either produced in terminal or lateral heads. It is a native of Dahuria, and flowers in June and July. Of this kind there is a variety with deeply-cut leaves; its synonyms are chamædrifolia, latifolia, and dahurica, and sometimes laciniata, and incisa.

Japan Spiræa (S. japonica).—This is a robust, twiggy shrub, 3 ft. or 4 ft. high, with large, broad, ovate leaves, acutely pointed, deeply and sharply serrated from the middle to the apex, smooth and greyish beneath. The flowers, which are small, are arranged in terminal, distinctly-stalked corymbs, and white; they are in rather small compact heads, and smooth. It is common in Japan, and flowers in June and July. This is the Spiræa macrophylla and the callosa magnifica of collections, and probably the doubtful S. magellanica.

Corymbose-flowered Spiræa (S. corymbosa).—A stout, erect, robust-growing shrub 4 ft. or 5 ft. high, with large oval-oblong leaves, unequally serrated, green above, hoary beneath, smooth, and set on short foot-stalks; the flowers are in large, close-branching, terminal corymbs, and white. It is a native of Virginia, and flowers in June and July. Of this there is a variety (Sororia) which is much dwarfer, seldom exceeding 2 ft. or 3 ft. in height, and which flowers much later in the season.



Fortune's Panicled Spiræa (S. Fortunei paniculata). See p. 188.

Ceanothus-leaved Spiræa (S. ceanothifolia).—This forms an erect bushy shrub, 3 ft. or 4 ft. high, with broad, ovate leaves, either rounded or tapering to the base, sharply and unequally serrated from the middle to the apex; the flowers are in rather small terminal corymbs, on short peduncles and white. The native country of this fine shrub is uncertain, but it is probably North America; flowers in June and July.

Wedge-leaved Spiræa (S. cuneifolia).—An erect branching, dense, canescent shrub, 3 ft. or 4 ft. high, with the principal branches arched or nodding and the lesser ones slender and drooping; the leaves which are rather small are firm in texture, ovate or obovate at the point, wedge-shaped at the base, downy and either crenated or entire; on the upper surface they are bright green and glaucous, downy beneath; the flowers, which are white, are arranged in terminal, close, corymbose panicles, thickly placed laterally along the principal shoots, on the ends of the short lateral branchlets; the carpels are in fives lying close together. Native of Nepaul, and flowers in July and August. Syns., cuneata, canescens, and nutans.

Round-leaved Spiræa (S. rotundifolia).—This has rather slender, angular, downy shoots and round blunt leaves, crenated at the apex; the leaves are much smaller than those of S. cuneifolia, of which it appears to be only a variety with rounder foliage. It is a native of Northern India and flowers in July.

Blume's Spiræa (Spiræa Blumei).—This forms a somewhat slender branching shrub, 4 ft. or 5 ft. high, with rather firm small ovate or obvoate, bluntly pointed leaves, which are regularly toothed towards the apex and entire at the base; they are slightly hoary and when young pale beneath, smooth and bright green on the upper surface and set on long slender foot-stalks; the flowers, which are white, are arranged in compact, terminal, pedunculated cymes, and are glabrous. It is a native of Japan, and flowers in July. This is the S. chamædrifolia japonica of gardens.

Hawthorn-leaved Spiræa (S. cratægifolia).—An erect, rigid-branched shrub, from 2 ft. to 4 ft. high, with stiff, glaucous, broadly-ovate, or oval, obtuse leaves, netted on the under side and set on short, stiff, glabrous stalks, doubly and acutely serrated towards the point and of a dull green colour; the flowers, which are disposed in small, fastigiate panicles or terminal compound, sub-capitate corymbs, are of a bright pink or red colour; the carpels are in fives, erect and glabrous. It is a native of Siberia, and flowers in June and July. This is the S. betulifolia of Pallas.

Hoary-leaved Spiræa (S. cana).—A small straggling shrub from 1 ft. to 2 ft. in height, with small, ovate, acute, quite entire leaves, thickly clothed all over with hoary, soft, loose hairs, the flowers which are white, are arranged in few flowered corymbs, somewhat spicate or racemose, with the lateral flowers pedunculated and lax; the petals are spreading, the styles thick and the carpels divergent and rather villous. It is a native of Croatia, where it is found on high rocks, and flowers in June and July. This is a pretty little shrub for rockwork.

Three-lobed-leaved Spiræa (S. trilobata).—This forms a neat little shrub, from 1 ft. to 2 ft. high, with short, stiff branches spreading horizontally; the leaves, which are rather small, roundish and three-lobed, are reticulately veined, smooth and glaucous beneath, crenated on the edges and of a deep green above; the flowers are white and disposed in umbel-like corymbs, with ascending petals and smooth carpels. It is a native of the Altaian Mountains, and flowers in May. This is sometimes named S. triloba.

Plum-leaved double-flowered Spiræa (S. prunifolia fl.-pl.). A long, slender, twiggy erectly-spreading shrub from 4 ft. to 5 ft. high, with for the most part long, undivided shoots, which produce their flowers in naked corymbs; the leaves which are about the size of those of the common Sloe, are oval, tapering a little to both ends, rather thick in texture, deep green and smooth on the upper surface, hoary grey, or somewhat downy beneath, finely and sharply toothed on the edges, and set on rather long downy stalks; the flowers are quite double, in numerous lateral stalkless corymbs, occupying the upper part of the shoots of the previous season, and when fully expanded pure white. It is a native of China and Japan, and flowers in April and May. Only the double-flowered form is known in England.

Pikow Spiræa (S. Pikowiensis).—This is a doubtful kind, which is said to form a slender branched shrub 3 ft. or 4 ft. high, with small wedge-shaped, obtuse leaves, which are rarely spear-pointed, but three-nerved and unequally serrated at the apex; the flowers, which are white, are arranged in short stalked corymbs, laterally placed on the previous year's shoots. It is a native of Podolia at Pikow and flowers in June and July. There appear to be two different plants bearing this name, one nearly related to Spiræa crenata, and the other the same as Spiræa sorbifolia; the first is considered to be the true one.

Meadow Rue-leaved Spiræa (S. thalictroides).—A low, erectly-spreading, slender, long-twigged shrub, 2 ft. or 3 ft. high, with rather small, firm, obovate, blunt-pointed leaves, tapering to the base, on long foot-stalks, distinctly three-nerved beneath, serrated on the upper part, entire at the base, bright green above and glaucous beneath; the flowers are white, in lateral, stalkless, downy umbels, or close corymbose panicles, and produced in May and June. It is a native of the Dahurian Alps, and the same as Spiræa aquilegiæfolia and hypericifolia latifolia. The S. Van Houttei is a vigorous variety of this kind, which bears white flowers in great profusion.

St. John's-wort-leaved Spiræa (S. hypericifolia).—This forms a slender, erect, long, wiry-twigged shrub, from 3 ft. to 6 ft. high, with very small, obovate, three or four-nerved leaves, slightly pointed, tapering much to the base, quite entire, on longish, slender foot-stalks, and either smooth or slightly downy; the flowers, which are small, white, and either in stalked corymbs or stalkless umbels, are thickly placed laterally on the top part of the last year's shoots. It is a native of Canada, and flowers in May and June.

[Synonyms—The Spiræa Plukenstiana, inflexa, and hypericifolia alpina; and there is a number of wild forms which are scarcely worth distinguishing from the original species.]

Acute-leaved Spiræa (S. acutifolia).—This is a wiry-branched, slender shrub, 3 ft. or 4 ft. high, very similar to S. hypericifolia; the leaves are small, ovate, wedge-shaped at the base, acute, with a small mucro, quite entire or rarely a little toothed at the top, and covered with spreading down; the flowers, which are in lateral stalkless corymbs, are white, the peduncles smooth, and the petals ascending. It is a native of Siberia, and flowers in May and June. This is the same as S. ambigua, acuta, and sibirica, and only a variety of S. hypericifolia, with ovate-cuneated, acute, slightly toothed or entire leaves, and with smaller flowers.

Crenated-leaved Spiræa (S. crenata).—This is another form of S. hypericifolia, with rather downy leaves, crenated at the apex, and very much smaller flowers, which have a yellowish tint; the flowers are arranged in stalked, lateral corymbs, and very small, the peduncles are covered with spreading down. It is a native of Spain, Hungary, and other parts of Europe, and it flowers in May. This is the same as S. obovata and savranica; and the S. Besseriana and uralensis are only slight varieties of it. Found on the Caucasian and Ural Mountains. S. hypericifolia oblongifolia of Loddiges is an upright, fastigiate variety, generally named S. hypericifolia longifolia.

Decumbent Spiræa (S. decumbens).—This is a small, decumbent shrub, from 6 in. to 9 in. high, with very slender shoots; the leaves, which are small, ovate, and blunt-pointed, regularly toothed towards the apex, entire at the base, are set on long, slender foot-stalks, tapering to the base, quite smooth, deep green above, and glaucous beneath; the flowers are in small, pedunculate, terminal corymbs, and white. It is a native of Siberia, and flowers in August; this is the same as S. nana, and the smallest of all the Spiræas.

Lance-leaved Spiræa (S. lanceolata).—An erect, neat little shrub, from 2 ft. to 3 ft. high, with rather small lanceolate leaves, which are deeply serrated towards the apex, quite smooth, deep green above, and pale beneath; the flowers are in close, few-flowered, pedunculated, axillary, umbels, and of a snow-white colour. It is a native of China, and flowers in August and September.

Reeves's Spiræa (S. Reevesiana).—This forms a spreading, slender, twiggy evergreen or sub-evergreen bush, 3 ft. or 4 ft. high, with lanceolate, acute pointed leaves, tapering to the base, and set on longish foot-stalks; they are coarsely and unequally serrated, quite smooth on both surfaces, glaucescent beneath, and on the strong young shoots so deeply lobed as to be almost pinnatifid; but when old they frequently lose the three-lobed character; the flowers, which are rather large, and pure white, are arranged in terminal corymbs, and set on long peduncles. It is a native of China about Canton, and flowers from June to August. Spiræa chinensis and cantoniensis are the same as this, and there is also a fine double-flowered variety of it.

Flowers in Corymbs, with Bladdery Carpels.

Guelder Rose-leaved Spiræa (S. opulifolia).—A large shrub 8 ft. or 10 ft. high, with rod-like shoots rather thinly furnished with leaves when young, and of a light brown colour when leafless; the leaves are mostly three-lobed and oval, doubly serrated, on longish foot-stalks, and frequently petiolated; the flowers, which are white and numerous, are disposed in stalked, hemispherical corymbs and smooth; the petals are spreading and slender; the carpels are in twos or threes, large, red when half ripe, and with the margins bladdery and membranous. It is a native of North America, from Canada to Carolina, on mountains, and flowers in June and July. There is a variety of it with much smaller leaves, which are greenish-yellow in colour.

Capitate-flowered Spiræa (S. capitata).—This grows from 3 ft. to 4 ft. high; it has ovate leaves, somewhat three-lobed, doubly serrated, netted beneath and tomentose, especially as regards the foot-stalks and calyx; the flowers are white, borne in terminal corymbs, somewhat capitate and set on long foot-stalks; the carpels are in twos and inflated. It is a native of North America, on the eastern coast and on the banks of the Columbia, and flowers in June and July. This is the same as S. opulifolia tomentilla, and is generally considered to be a variety of S. opulifolia.

The Pinnate-leaved Spiræas.

Service-leaved Spiræa (S. sorbifolia).—This is a thick, stiff-branched, spreading shrub, from 4 ft. to 5 ft. high, with large pinnate, thin leaves, bright green on both sides; the leaflets are stalkless, lanceolate, opposite, doubly and sharply serrated, quite smooth and bright green; the flowers, which are small, are borne in large terminal, thyrsoid panicles, white and scented. It is a native of Siberia, where it is found in boggy places; it flowers in July and August. S. pinnata is the same; and there is a dwarf variety of it with much smaller leaves, and flowers twice the size, named S. alpina and Pallasi, found in moist places on the high mountains about Lake Bairal, Eastern Siberia, Kamtschatka, and the Amoor. This is the S. sorbifolia, alpina, dauvurica, Pallasi, and grandiflora of collections.

Lindley's Spiræa (S. Lindleyana).—A large, robust, thickly branched shrub, from 6 ft. to 8 ft. high, with very large pinnate leaves; the leaflets are lanceolate, regularly and doubly serrated to the base, slightly tomentose on the under side and feather-nerved, smooth on the upper surface, with the smaller teeth on the larger serrature, very small; the leaflets are very acute, stalkless, rounded at the base, and of a dull green colour; the flowers are in very large terminal thyrsoid panicles, and white. It is a native of Nepaul, and flowers in July and August. This kind has the largest leaves of any of the Spiræas, and forms a remarkably handsome shrub in autumn, when few others are in flower. Spiræa tomentosa is the same thing, and the S. Schizonotis of Lindley, which means split back, is also another name for it.

Note.—The Neillias of Professor Don are considered by some botanists to be species of Spiræa.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

A Bignonia Tree.—A mile or more from these premises (Rural Grounds) is a tree that, at this season of the year, everybody that catches a glimpse of in passing stops to examine more closely. It is the "Trumpet Flower" (Tecoma radicans). It is 12 in. in circumference at the ground, bifurcating 1 ft. above first into two, then, further up, into several stems, and 20 ft. in height. It is supported by a pole 19 ft. in height, and held to it by a chain. This pole is concealed by foliage, and the foliage is now covered with the large red trumpet flowers so well known everywhere. It is eleven years old from the cutting. Thus, from one of our most familiar climbers, a thing of singular and surpassing beauty is formed.—" Rural New Yorker."

An Ancient Oak Tree.—The following particulars concerning an old Oak tree just dug up at Burley will be read with interest. A day or two ago some workmen digging a trench on a roadside, opposite the Cardigan Arms, cut through several feet of black earth, thickly mixed with rolled and rounded sandstones, and then coming upon alluvial earth, struck at a depth of 15 ft. on a very long trunk of Oak, 8 ft. 9 in. in general girth, and of about the same girth throughout, from which they sawed out a length of 20 ft. The whole of the tree has, however, since been dug up, and it has been bought by Messrs. Hummerston, East Parade, Leeds. The dimensions of this Oak may be judged from the fact that it weighs 4 tons, and had to be cross-cut before being removed to the saw-mill. In colour it is of an ebony black, and the wood is sound throughout, though of course very wet, having been buried in the earth, it is conjectured, at least 200 years.

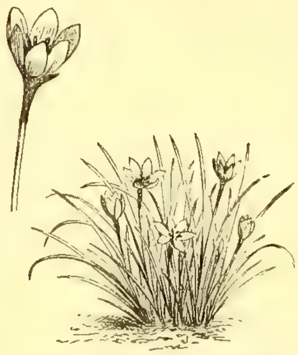
THE INDOOR GARDEN.

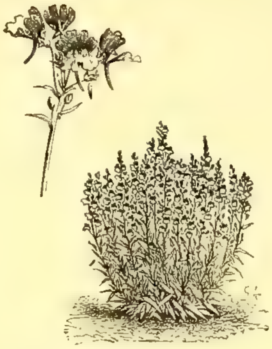
CULTURE OF COMBRETUM PURPUREUM.

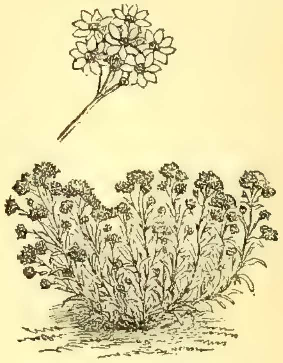
This belongs to a somewhat numerous family, mostly ever green twiners from hot regions; but this is the only one tha has met with much favour amongst plant growers. It does not grow so large as many stove climbers, and on this account it is more suitable for places where the space that can be afforded to it is limited. Its flowers, which are very handsome, are borne in large, spreading, fan-shaped sprays 1 ft. in length, and nearly as much in width: the colour, reddish crimson, is rich and deep; the flowers are individually small, but they are produced in large numbers, standing close and erect on the upper surface of the spike, which assumes a horizontal position. The plant is suitable for twining round a pillar, clothing a rafter, or training as a specimen on a trellis. In the latter case it can be used when in bloom for decorative purposes in a warm conservatory or heated Fern house; yet it must not be subjected to draughts in a cool house, as it is essentially a warm stove plant, coming from the hot, moist regions of Madagascar, and therefore cannot bear for any length of time either a low temperature or dry atmosphere. It is increased by cuttings, which by many are found rather difficult to strike. The strong young shoots are somewhat pithy, long-jointed, and liable to damp off. If cuttings made from growth of medium strength that has got two-thirds ripened in the summer be put singly in small pots, drained and filled with clean sand, and placed in a brisk heat moderately moist, and kept close, they will callus in a few weeks, and ultimately emit roots. As soon as these exist in sufficient quantities to support the cuttings, they should gradually be inured to air by tilting the propagating glasses more by degrees, until they can be dispensed with altogether. They should be kept at the warmest end of the stove, and when they have got enough roots to bear moving ought to be put in 4-in. or 5-in. pots. The soil should consist of good fibrous peat, without anything added, except sufficient sand to insure its keeping for years quite porous. This latter is essential, as the plant, from its evergreen character, cannot bear shaking out like some things. The soil must be kept moist, but not too wet. Syringe daily overhead, and slightly shade from the sun until the middle of September, when both may be dispensed with till the spring. As the days get shorter, reduce the temperature, which may be kept during the season of rest at 65° in the night, with 5° higher by day. Less water should be given through the winter. About the middle of February let them have 5° more heat by day and night, but do not pot them until the roots have begun to move freely, as they do not require nearly so much root-room as other plants, At the beginning of April they may be moved into pots 3 in. larger, giving them similar soil to that in which they were first potted. They should now have a few neat sticks inserted in the soil, round which to train them. They ought to have their points pinched out, so as to induce them to make several shoots. The night temperature may now be raised a few degrees, in the daytime letting it run up to 80°, after which give air, closing with sun-heat, and syringing each afternoon. A thin shade will now be required in bright weather. Do not overwater, as the Combretum is comparatively a slow-rooting plant, and until the roots have begun to enter the new soil, it is better to keep it a little dry. Continue to syringe overhead when the house is shut up in the afternoons, with a moist atmosphere day and night. As growth is made, keep the shoots trained regularly round the sticks, for if allowed to become entwined in each other, they are liable to get injured in undoing them. Nothing further will be required, except a continuance of this treatment, until the middle of July, when, if the plants have made sufficient progress to bear a second shift, again give them pots 3 in. larger, now using the peat in a little larger pieces than before. It is safer practice with subjects of this description that do not make rapid growth, to give two moderate shifts in the season than one large one, as, if the work be carefully done, they will not receive any check. They will now need larger and stronger sticks to support them, and through the remainder of the summer they will simply want attending to as before. In September cease to syringe or shade, giving air and less moisture in the atmosphere, as well as at the root, so as to discourage their making much growth and to ripen up the shoots. Reduce the temperature 5°, both day and night, through the autumn, ultimately lowering it to the point I recommended for the preceding winter. During winter keep them in a light situation well up to the glass, for upon the wood being well matured will depend their flowering freely the ensuing summer. As the days lengthen again raise the temperature gradually as before, and in April move them into pots 3 in. or 4 in. larger, according to the quantity of roots they are found to have; in these they must remain through the summer. They should now be taken off the sticks, and stout wire trellises should be placed to the pots, round which the shoots should be trained, arranging them so that the bottom of the trellis shall be well covered. Their treatment through the growing season will require to be similar to that which was recommended for the preceding; by midsummer they will show flower, which will open some weeks later in the season. It will not be advisable to remove them from the stove to cooler quarters this season, as it would check their progress, and the object will be to increase their size and ability to bloom the ensuing summer. As the autumn advances, again give more air and less moisture, treating them as before through the winter. Before growth commences in the spring, if any overlong shoots exist they may be shortened back, but the knife must not be used too freely, or it will limit their power to flower. About the same time as previously they should be turned out of their pots, and any loose soil at the top of the ball that the roots have not taken hold of ought to be removed. Give them a 2-in. or 3-in. shift, and treat them subsequently through the season as before. When in flower they may be moved, as already mentioned, to a somewhat lower temperature during the warmest part of the summer. Each spring they ought to be turned out of their pots and as much of the soil removed as can be got away without much disturbing the roots, replacing it with new material, but the pots already recommended will be large enough for ordinary purposes, assisting them during the growing season with manure water once or twice a week. When grown on the roof or similar position, all that is required is to keep them regularly trained, not tying the shoots in too closely, but in most cases it will be found better to confine the plant to a pot than to turn it out, not the least advantage of which is that, so grown, it can be at any time moved to another place, and it will last for years in a pot when fairly treated. T. Baines.

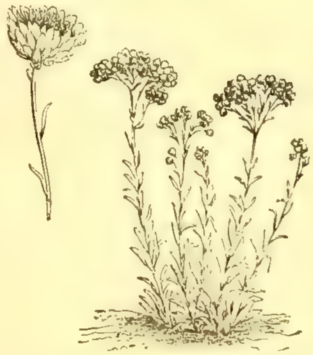
Torenia Fournieri.—Allow me to call the attention of your readers to this most effective novelty. It was, I believe, introduced by M. Linden, of Brussels, as a species distinct from the old and well-known T. asiatica—a position to which I think it is fully entitled, notwithstanding that Mr. W. Thompson, of Ipswich, from whom I had the seed, is inclined to look upon it as only an improved variety of T. asiatica. It is of more upright habit, and branches in pairs proceed from every joint, giving the plant a candelabra-like form. The calyx is quinque-partite and angular, having the angles broadly winged. The corolla is much more irregular than in T. asiatica, having a broad standard petal, usually creased in the middle, so as to form a somewhat triangular hood. It varies in colour from pale lavender to almost white, while the two side petals and the lip are a glowing velvety-purple. The throat is pale lavender, with a bright yellow blotch, a similar blotch occurring on the lip just where the purple and the lavender join. It is extremely free-flowering, plants raised from seed in March last being now in full bloom, and showing numerous buds at every point. It grows freely in an intermediate stove, and has the valuable property of standing the atmosphere of an ordinary sitting-room without injury for a considerable time, and it will continue to expand its flowers there as well as in the stove. Its graceful habit of growth and chaste, elegant flowers, are sure to render it a great favourite wherever it is grown.—Greenwood Pim, F.L.S.

Worms in Pots.—The "Journal d'Agriculture Pratique" states that these can always be got rid of by using for the plants water to which a tenth part of grated Horse Chestnut has been added. Under this treatment, it is said, the worms must either fly or die.


Atamasco Lily (Amaryllis Atamasco).


Nemesia versicolor.


Helichrysum Humboldtianum.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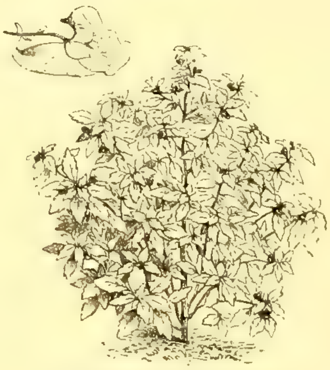
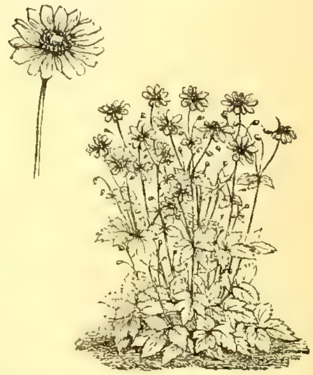
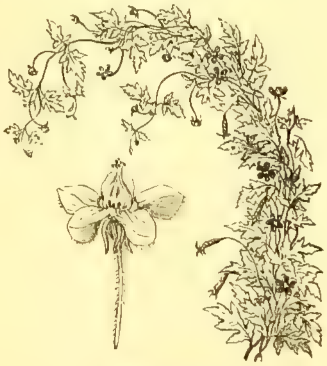
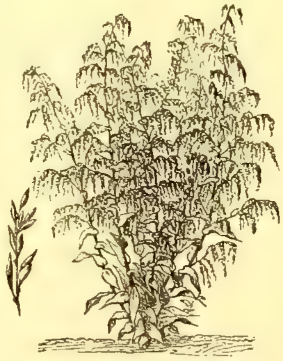
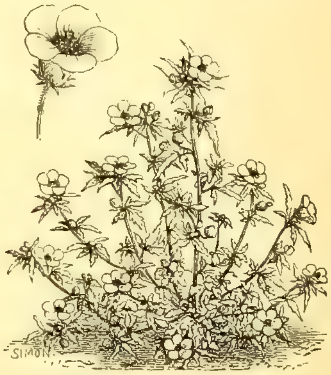

Three-horned Touch-me-not (Impatiens tricornis).

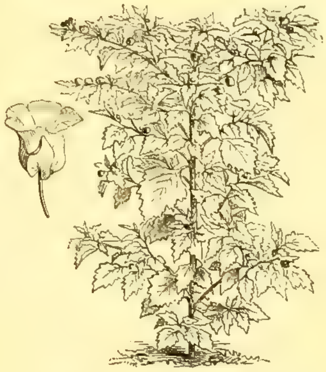

Japanese Windflower (Anemone japonica).

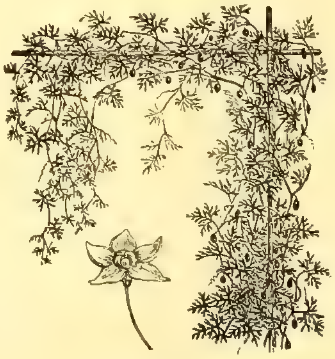

Loasa aurantiaca.

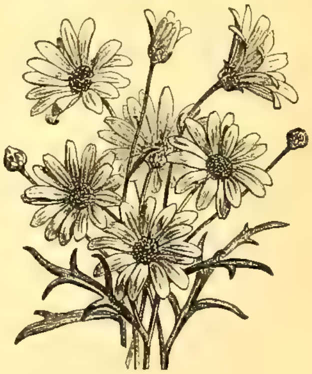

Humea elegans.



The Bladder Ketmia (Hibiscus Trionum).


American Nicandra (N. physaloides).

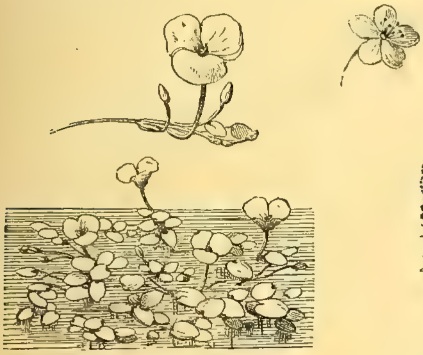

Abrobra viridiflora.


Chrysanthemum frutescens.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

HARDY FLOWERS IN LONDON GARDENS.

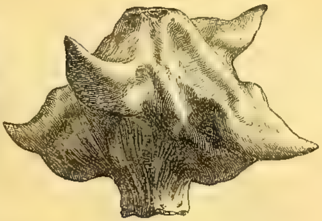
Antirrhinums, Phloxes, Pyrethrums, Hollyhocks, Violas, and Pentstemons are now in good condition in most gardens, and afford a good opportunity for making selections for the coming season. Among Phloxes P. coccinea is one of the best, a bright fiery crimson; Frederic Soulie, magenta; Larina, Queen of Whites, and Miss Robertson, white; Walter Ware, rich rose-lake; Liervalli, purple with a white cross; Mons. Marin Saison, deep reddish-crimson; Rifleman, flesh with a dark rose centre; Ruby, deep crimson-purple; Triomphe du Parc de Neuilly, fiery salmon; and many others. The richest-coloured Antirrhinum I ever remember to have seen is Mr. Swarbruck, an intense deep velvety-crimson kind; delicatum, creamy-white with an orange centre; Painted Lady, white striped and splashed with crimson; album perfectum, pure white; Fire King, crimson; and King of the Yellows; than these a better half-dozen could not be found. Some of the best double Pyrethrums are Argentine, niveum plenum, and Olivia, all pure white; Haage et Schmidt, velvety-crimson with a lighter centre; Gloire de Stalle, purple-carmine; Marquis of Bute, rich crimson; Comte de Montbron, magenta-red; Herman Stenger, rosy-lilac; Garibaldi, rose-lilac; Prince de Metternich, pure white with an orange centre; and sulphureum, pure white with a sulphur centre. Amongst Lilies all the Tiger varieties are now in flower, splendens, erectum, and the double form being the most distinct; if more be wanted add Fortunei majus, a kind with very woolly stems and large, bright flowers; jucundum (known also as Lishmanni) and Maximowiczi, cinnabar red; also the late and early forms of the crimson tigrinum. Of the speciosum group I have only seen one variety, viz., rubrum multiflorum, a dwarf form, with very deep-coloured flowers and very floriferous; L. superbum and auratum are still in good condition. The Mexican Tiger-flowers (Tigridias) are very conspicuous, their large flowers and brilliant colours amply compensating for the short period during which the individual flowers last. Of Rigidella flammea and Cypella Herberti, plants closely allied to them, the former bears brilliant-flamed crimson flowers; this is, however, not quite hardy. Tritonia aurea is also finely in flower. Amongst tall-growing border plants the varieties of Anemone japonica stand in the foremost rank, their handsome foliage and innumerable flowers rendering them very attractive; the gem amongst all autumn flowers is still, however, as stated last week, Senecio pulcher, which when better known must be everybody's plant. In the yellow-flowered Centaurea babylonica we have a good subject for the wild garden and shrubbery borders. Chelone Lyoni, obliqua, and obliqua alba form a good group, in which the flower-spikes rise to a height of 2½ ft., and bear numbers of large, inflated, Pentstemon-like blossoms, both red and white. Lychnis doica alba plena is an excellent plant, which in strong soils often grows from 3 ft. to 4 ft. high, and bears flowers of the purest white, and very double. Stevias of different kinds look well in large clumps, their flowers being very abundant, and red, purple, and white in colour. Catananche cœrulea and bicolor are both good for cutting purposes, their flowers being bright and conspicuous. Hypericum Gebleri, which bears large yellow flowers on an erect stem 3 ft. in height, is one of the best of the large St. John's Worts. Leucanthemum alpinum and L. lacustre are effective plants when furnished in profusion with large, Daisy-like flowers; of the two the first is the best. Buphthalmum salicifolium, a fine, showy, yellow-flowered composite, makes a showy border plant, and one which is also useful for exhibition purposes. Erythrina Crista-galli, the Australian Coral-plant, is literally covered with rich crimson blossoms; in dry, warm situations it will live out-of-doors during warm winters. Marvel of Peru (Mirabilis jalapa), though a very old plant, is not grown half so extensively as it ought to be, and would be, could people see it in good condition bearing myriads of flowers of every shade of colour, as it is now doing. Lithospermum prostratum is flowering a second time; and of other plants fit for front rows in gardens may be mentioned Eriogonum umbellatum, a Californian species, with umbellate heads of yellow flowers; many Campanulas, especially the varieties of turbinata, pusila (not pumila), isophylla, the white cenisia, Hosti, Hosti alba, garganica, and many others, all of which are flowering beautifully in cool, shady spots. In similar positions are Myosotis azorica with indigo-blue flowers, the white variety, and M. Impèratrice Elizabeth, a robust-growing form of azorica with lighter-coloured blossoms, all of which make good pot plants. Potentilla sub-caulescens and P. alchemilloides, the former yellow and the latter white, are interesting rock plants. Thymus patavinus is a neat and showy plant, having an erect habit and bearing large purple flowers; Hypericum balearicum and ægyptiacum are two interesting shrubs with yellow flowers; both are hardy on rockwork in dry, well-drained situations, and they also succeed well grown in pots in a cold frame. Spiræa procumbens, a shrubby species, scarcely 6 in. in. height, is now covered with white flowers; this is quite hardy, and promises to be a most useful plant. Linum monogynum var. candidissimum, a graceful plant with snowy-white flowers, and L. viscosum with rose-coloured blossoms, are both interesting plants, that grow freely in any open loamy soil. Delphinium chinense and its varieties form a pleasing group of very dwarf plants, that will grow in almost any soil, and will continue in flower for a long time. The very interesting Water Chestnut (Trapa natans) is now in flower, and has been so for some time; the flowers are interesting but not conspicuous, but the fruit is the most remarkable part; the plant thrives in waters in the south of England. The showy Limnocharis Humboldti also flowers out-of-doors, but only, we believe, in water slightly warmer than it usually is in the open air with us.



Limnocharis Humboldti.

Leschenault's Loosestrife (Lysimachia Leschenaulti).

Water Chestnut (Trapa natans).



Fruit of Water Chestnut.

[We this week terminate the series of illustrations of plants in flower from week to week, having now given them for more than a year. We propose to continue our notes on hardy flowers from week to week, however, and these can scarcely fail to be helpful to all readers interested in the matter, as they will be written by one thoroughly conversant with the hardy plants in cultivation and continually among them.]

Itea virginica is a native from New Jersey southerly, and there it attains the proportions of a large shrub; but here it is not so robust. Our plants are very small, nevertheless every little bit blooms; even plants scarcely 6 in. high are more flower than anything else. The flowers are white and in drooping racemes.

Hydrangea radiata and **H. arborescens** are now from 3 ft. to 5 ft. high, and every branchlet is terminated by a flat cyme of greenish flowers. The young wood is generally winter-killed a good deal, but the growth is very rapid, and though not very handsome, these species are the first to bloom.—W. Falconer, in "Country Gentleman."

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

August 21.

This meeting was better attended than the last, and the exhibits, though not numerous, were in many instances of an attractive character. Messrs. Veitch & Sons sent a group of new and rare plants, which, together with a fine collection of cut blooms of seedling Gladioli from Messrs. Kelway & Sons, of Langport, formed the principal features of the show.

First-class Certificates were awarded as follows :—

Oncidium prætexum (Veitch). — A kind having dark green leathery leaves, and bearing branched spikes of drab-coloured blossoms, the centre of the lips being of a dullish yellow.

Phaius Dodgsoni (Williams).—A plant bearing large drooping clusters of Dendrobium-like flowers, with pure white petals, and orange coloured throat, surmounted on strong stalks, which are regularly furnished with lance-shaped leaves; a good addition to Orchids already in cultivation.

Ixora formosa (Fraser).—A seedling of compact habit of growth, and bearing an abundance of well-formed trusses of lemon and orange-coloured blossoms.

Begonia Queen of the Whites (Veitch).—A seedling from B. rosæflora, possessing the habit of B. Veitchi, and bearing pure white flowers with golden stamens. This is doubtless the best white kind yet raised.

Streptocarpus Greeni delicatus.—A free-flowering kind, bearing delicate white and lavender-coloured blossoms.

Gladiolus Prince George (Kelway).—A distinct kind with fiery scarlet blossoms, the centres of which are striped with white and purple.

Gladiolus Cymbeline (Kelway).—A variety with large flowers with delicate rosy-pink petals and pure white centre. A good sort for pot culture.

Gladiolus Baroness Burdett Coutts (Kelway).—A kind with bold, well-formed, pure white blossoms, the centres of which are conspicuously marked with violet-purple.

Gladiolus Charles Noble (Kelway).—A brilliant crimson flower with a white centre.

Gladiolus The Odalisque (Kelway).— A kind having cream-coloured, waxy, round flowers of good substance, with claret-coloured centre.

Pelargonium Lafayette.—A strong-growing kind, having large, horse-shoe leaves, and bearing fine clusters of salmon-pink, double blossoms. Well adapted for pot culture where large specimens are desired.

Pelargonium Littre.— A variety bearing bright rosy-pink blossoms very double and large in size. Useful for furnishing cut blooms.

Abutilon Lemoinei.—A good-habited kind having large, dark green, Vine-like leaves, and bell-shaped flowers of a pale yellow colour, produced freely from every shoot. A decided acquisition.

Blue Spruce (A. Waterer).—A silvery-leaved form of the type—of good habit, and ornamental in appearance.

Torenia Fournieri.—A desirable greenhouse plant, previously described in The Garden.

Miscellaneous Subjects. — In Messrs. Veitch's collection of plants were good examples of Dendrochilum filiforme, Lapageria alba, Cattleyas, Zygopetalum Sedeni, and the brilliant-flowered Begonia Davisi. Mr. B. S. Williams, Holloway, sent a fine specimen of Ixora Williamsi, which was flowering for the third time this season; the same exhibitor also furnished Croton fasciatum, and a well-flowered plant of Lilium auratum maculatum. Mr. Cannell, Swanley, contributed examples of Lobelia Brighton, grown under glass and in the open air, to show its adaptability to both purposes; from the same source also came a box of cut blooms of the double pink Pelargonium Thibaut in excellent condition. Messrs. Kelway & Son showed cut blooms of Hyacinthus candicans which were much admired; a plant of the brightly-coloured flowered Begonia, Empress of India, was sent by Messrs. G. and J. Perkins, Leamington, who also exhibited cut blooms of Phloxes. Mr. Tong, gardener to J. S. Law, Esq., sent two baskets full of dwarf Begonias profusely flowered, evidently from the open air—a kind of treatment for which they appeared to be admirably adapted. A good plant of Cœlogyne corrugata came from Mr. Green, Reigate, who had also a collection of Streptocarpus. Groups of double Pelargoniums and of cut blooms of Dianthus came from the Society's gardens at Chiswick, also cut blooms of Salpiglossis sinuata. Mr. Fraser, of Lea Bridge, sent baskets of seedling Ixoras in good flower; and Mr. A. Waterer sent flowering sprays of Andromeda arborea which were much admired.

Fruit and Vegetables.—Mr. Tillery, Welbeck, furnished good examples of Queen Victoria Nectarines; and Mr. Morse sent bunches of a new seedling Grape, the result of a cross between Black Hamburgh and Muscat of Alexandria; the bunches were large, as were also the berries, and the flavour was fairly good. A large scarlet-fleshed Melon of good quality came from Mr. Tong; and Mr. Burnett, The Deepdene, Dorking, showed a green-fleshed kind named Incomparable, of no particular merit. Well-ripened roots of Trebon Onion came from the Society's gardens, the flesh of which was very white and mild in flavour.

THE CAPSICUM AND ITS CULTURE.

There appears to be some uncertainty as to the native country of the Capsicum or Hot Pepper (Capsicum annuum, Peperoni of the Italians, Piment of the French), now so universally spread over all tropical countries. Although long known under the name of Indian Pepper, it appears not to be indigenous in Asia, and there is no authentic record of its cultivation in Europe before the discovery of America. It is said to be really wild in that country, and Cæsalpin and Clusius, late in the sixteenth century, both speak of it as introduced from thence; yet, in the time of Matthioli, early in the same century, and, consequently, at a period when very few of the natural productions of the New World had been transplanted to the Old, we find, at least, three varieties well-established and abundantly cultivated in Italy under the name of Indian Pepper, which is hardly probable if it had been really introduced from America, then so recently discovered. A curious instance of the slowness with which the use of culinary vegetables is spread, is afforded by the large green mild variety of Capsicum, which is so much eaten over a great part of Spain and some of the adjoining French departments. It was carried by the Spaniards into Naples during their dominion in the sixteenth and seventeenth centuries, and has ever since remained in common use there, without spreading further. It makes an excellent ingredient in salads, having all the flavour of the ordinary Capsicum without the slightest pungency.

Cultivation.

Capsicums, in some parts of England, may be successfully grown in the open air, but where large supplies are needed it is advisable to have some under glass also, in case of failure of the outdoor crop. The seeds should be sown early in April, in a gentle hotbed, or in pots or pans, well drained and filled with sandy loam and leaf-mould in equal parts, and if plunged in a gentle bottom-heat they will germinate more quickly and the plants will be much stronger than when only placed on bare shelves. As soon as they are large enough they should either be potted off singly into 4-in. pots, or three plants placed triangularly in 6-in. or 8-in. ones. In the latter case it will be found best to only fill the pots three parts full at first, with a view to earthing them up when the soil becomes full of roots. In order to have dwarf, shrubby, and healthy plants, it is necessary to place them as close to the glass as possible in a temperature of 65° or 70°, giving them liberal supplies of water, and admitting air freely on every favourable opportunity. Plants that are potted into 4-in. pots should not be allowed to become potbound, but should be shifted into 6-in. or 8-in. ones. Those plants that are to be turned out-of-doors should be gradually hardened off towards the latter end of May, and in June they may be planted out into a warm border under a south wall. They should be planted 10 in. or 12 in. apart, well watered when necessary, and in the event of cold weather setting in should have some slight protection afforded them; if the season be favourable, they will ripen their fruit from the end of August to the middle of September. Where, however, there are pits or frames available for Capsicums, they are the best places in which to grow them. Frames recently cleared of early Potatoes answer the purpose perfectly. The

Capsicum in open border.

plants should be put in 12 in. apart, kept well watered at the roots, and be frequently syringed overhead on sunny afternoons, and shut up with plenty of sun-heat. When in flower abundance of air must be given in order to assist them to set their fruit, after which time liberal supplies of manure-water may be given them with advantage. By adopting this method it is astonishing the quantities of fine, large fruit that can be gathered from a three-light frame. When Capsicums are planted out-of-doors or in frames, a light, rich soil composed of turfy loam, well-rotted leaf-mould, and cow manure in equal parts, with the addition of a little silver-sand, is best suited to them, but when grown and fruited in pots, a more solid soil will be found best, which can be gained by dispensing with the leaf-mould.

Varieties.

There are now many varieties of Capsicums, but the kinds mostly grown for culinary purposes are the Long Red, Long Yellow, and Small Red; the latter, which are the hottest, are sometimes called Chilies. The pods of these are used in a green state for pickling, when ripe for mixing with other things in sauces, and when in a dry state they are ground and used as Cayenne Pepper. Capsicums, although generally cultivated for culinary purposes, are far from being uninteresting as decorative plants. We have several varieties in our gardens, all bearing bright scarlet or yellow fruits, which contrast well with their deep green foliage. Yellow Gem is a dwarf-habited plant, with large, deep green leaves, and bright orange-furrowed, top-shaped fruits; Prince of Wales, a most elegant form, having slender branches laden with a profusion of small, oblong, sharp-pointed fruits of a pale yellow colour, is a sort that well deserves culture as one of the prettiest of all the smaller-fruited kinds; and C. Princess of Wales, which was the result of a cross between the two last-named varieties, is more robust than either, with fruits 1½ in. long, top-shaped, and furrowed, the colour being intermediate between bright orange and pale yellow. These kinds are certainly worth growing for purposes of decoration only, and if grown dwarf and shrubby, the plants are very useful as well as beautiful, inasmuch as they last a considerable time when placed in a moderately cool house and kept well supplied with water. There are also several other valuable varieties for this purpose, namely Bird's Eye (very pretty), Cherry, Square, and the largest of all the Capsicums, The Monster. Well-ripened pods of Capsicums will keep good for several years if placed on a dry shelf, and the seed will germinate at six or seven years old if kept in the pods.

Insect Enemies.

The principal enemies of the Capsicum are green fly and red spider; the former may be easily kept in subjection by fumigation and the latter by a free use of the syringe on the foliage, and maintaining a warm, humid atmosphere in the house in which they grow. Those planted out-of-doors are generally most affected by red spider, their position being such as will not admit of those means recommended to keep the enemy in check being employed. The only way in this case to keep them in check is to give frequent waterings overhead and at the roots, and do all that is possible to promote a free and luxuriant growth in the plants. Curl in the leaf and fruit may often occur in outdoor plants in the autumn; this is, however, more or less occasioned by the cold nights following days of extreme heat. The only remedy is to shade slightly during the day, and afford a warm covering at night.

S.

Paraffin and Kerosene.—The English papers contain accounts of soaking Peas and other seeds in paraffin, to prevent their destruction by insects and birds. One correspondent wishes to know if the heat necessary to melt the paraffin will not injure seeds. His question is a very proper one, as paraffin is really a solid, like wax, which could only be used in the melted state, and it would probably have no protecting effect. The trouble rises from an incorrect use of terms. The illuminatng oils, that we call kerosene, are in England known as paraffin oils, which have by usage come to be called simply paraffin. If our ("American Agriculturist") correspondent wishes to experiment, let him use kerosene, and he will be able to see how far the method of English cultivators will answer here.

The Society of Apothecaries intends to offer a silver medal for proficiency in botany, to be competed for by ladies only.

AMERICAN FLOWER AND FRUIT MISSIONS.

One of these Missions, established in 1869, has since that time been carried on successfully in Boston. From its "Proceedings," which have just reached us, we select a few passages which may prove useful to people interested in Flower Missions in this country:—The origin of this Flower Mission is entirely due to a Boston lady, to whom the idea of such an organization occurred as she was walking through the city with a bunch of Columbines in her hand, and noticed the eagerness with which a few hungry-looking children begged for the flowers. The same summer, she saw a great many Pears wasting in a friend's garden, merely because he knew of no one to whom he could send the fruit. These two incidents suggested to her a new charity. Through Mr. Chaney's influence, the use of Hollis Street Chapel was given, as a centre to which the flowers might be brought for distribution. A few friends living out of town were then consulted, and were kind enough to promise their help. The Chapel was opened May 10th, 1869, and a few young ladies received thirteen contributions of flowers and carried them to eight hospitals and thirty-six private cases. The average distribution for this summer was 121 bunches each day, which has since more than trebled itself, increasing in 1876 to an average of 370 bunches daily. As it began the first summer it has continued ever since, the chapel being open from eight to twelve o'clock every Monday and Thursday from May to October. Through June as many Roses and Lilies of the Valley as can be spared are gladly disposed of, for they are received with more enthusiasm than any flowers we have. One Rose goes a great way towards making a small, hot room more bearable, and an invalid more cheerful. But there is every variety of taste to suit, and if the sick are cheered with the more delicate, the work-room girl does not despise the Peony; and many old people, who have seen better days, ask affectionately for the Bachelor's Buttons and Hollyhocks familiar to them in their youth. One person we know has a fondness for Dahlias, some like curious specimens, and others ask for slips; whilst one very appreciative old lady says that even a green leaf reminds her of the "Great Giver," and is precious for that reason. Her daughter said to one of the ladies in the autumn, "You have no idea how much good you do with your flowers. I never realized it myself, although mother has always enjoyed them so much, until I was sick last summer; then I found I didn't care for anything so much as the flowers you brought me. Of course we need money and ever so many things that you can't give us; but somehow the flowers are better than anything else." We must also mention an old friend who shows us with pride a row of dried bunches which she pathetically says she can never bear to throw away. During the heat of July and August it is, we know, harder for our friends to send their contributions; but the flowers are especially needed in those months when there is more sickness and suffering of every kind, and those who cannot have country air should at least have a reminder that the world is not bounded by city walls. There is one woman who is paralyzed, and cannot stir from her bed unless lifted, who esteems the sight of a certain tree within view of her window, one of her greatest privileges. She is naturally only too happy to have a bouquet at her bedside. She almost lives on the fruit we are able to take her, as she is too old and sick to have any appetite for more substantial diet. As the tanks are filled, one or two ladies transfer their contents to baskets, and go out to the Bennet Street Dispensary or Diet Kitchen. At the Dispensary all sorts of people are assembled, waiting in the various rooms to consult the physicians. Of all the places that we visit this presents, perhaps, the possibility of a wider circulation of flowers than any other, as we rarely see the same persons twice. In fact, we always have to explain that our bouquets are not for sale, which creates surprise and pleasure. The Diet Kitchen, too, dispenses our flowers with its soup and milk, and the woman in charge says that many of the applicants for food, at the sight of the flower-basket in the corner, ask first for a bouquet and almost forget their proper errand. At twelve the carriage of some kind friend generally arrives, and we pile it high with baskets of flowers and send it off to the City Hospital. Much pleasure might be given if the flowers so freely used in the decoration of churches and at evening entertainments could be sent the next day to some hospital. A donation of this kind is always welcome, and the giver need not feel obliged to send it through the Flower Mission.

Opening Kew Gardens at Earlier Hours.—A public meeting was held on Tuesday evening last, at the Instructional Institute, Kew, to take into consideration the desirability of opening the Botanic Gardens at an earlier hour than at present, and the removal of the existing unsightly wall in the Richmond Road. The chair was taken by the Rev. P. W. Nott, M.A., Vicar of Kew, and amongst those present we noticed E. C. Dermer, Esq., J.P., Lt.-Col. Burdett, J.P., Dr. Sellé, Major-General Nott, Dr. Atkinson, Hon. A. Turnour, Charles J. Cross, Esq., Edwin Ash, Esq., and C. Turner White, Esq. The first resolution was then proposed by Mr. White, and seconded by Mr. Bell, namely—"That the Royal Gardens of Kew having been dedicated to public use and enjoyment in the year 1840, and from that time maintained at the public expense, it is the opinion of this meeting that the same facilities for their free enjoyment should be afforded as at Hampton Court, Battersea Park, and other places, and that the present restricted hours of admission, namely, from 1 o'clock till sunset, is arbitrary, unnecessary, and quite out of harmony with the spirit of the age, and this meeting hereby pledges itself to use all constitutional means to procure the opening of the Gardens at 10 o'clock in the morning, without in any way interfering with the existing regulations regarding the houses." A gentleman from Northampton then addressed the meeting in support of the resolution, which was carried with acclamation. It was then proposed by Mr. Layton, F.S.A., seconded by Mr. Cross, and supported by Dr. Sellé, and carried unanimously—"That, in the opinion of this meeting, the present brick wall bounding Kew Gardens in the Richmond Road, which has been recently made more unsightly by being unnecessarily raised, should be removed, and a form of enclosure adopted, similar to that in use at the public parks and elsewhere, thereby giving increased light and air, and adding very much to the improvement of so important a highway." The third resolution—"That a permanent Committee be appointed to give effect to the foregoing resolutions, with instructions to take such steps during the next session of Parliament as they may be advised"—was proposed by Mr. Denton, seconded by Mr. Stock, and carried *nem. con.* Dr. Atkinson then proposed—"That copies of these resolutions be forwarded to all the Metropolitan Members of Parliament, the Members for the Home Counties, and the Members for the various boroughs in the same Counties." The resolution was seconded by Mr. Fletcher, and carried unanimously. The last resolution—"That a fund be raised, to be entitled 'The Kew Gardens Public Rights Defence Association Fund,' and that an account be opened with the Richmond Branch of the London and County Bank in the names of the Treasurer and two Members of Committee"—was proposed by Mr. Watson, seconded by Mr. Henry Pullman, and carried unanimously. After a vote of thanks had been accorded to the Chairman, the Honorary Secretary, Mr. C. Colman, jun., announced donations subscribed in the room to the amount of £68, and the meeting terminated.

Seedling Araucarias.—There are at present at Castle Wigg, Wigtownshire, several dozens of two and three-year-old seedling Araucarias, the progeny of a male and female tree there, which for the last four years have borne cones regularly. When the first batch was raised, I recorded the fact in your columns as the first Scottish Araucaria seedlings, and I have not seen any recorded since. Precocious fertility is, as you remark in your note (p. 125), very undesirable, but there are now many plants in the country between thirty and fifty years of age, and from these we may fairly look for a supply of edible seeds. The best seeds for propagation will for many years come from Chili; the best use to which we can put home fruits as yet is as an addition to dessert fruits.—Salmoniceps.

Flow of the Sap.—In Mr. Murray's article on the flow of the sap (see p. 147) he states that in the case of a graft "the properties of the stock are carried up into the scion, but those of the scion are not carried down into the stock." Whilst walking through Mr. Barron's nurseries at Borrowash the other day, he showed me some common Laburnums that had been budded with the golden variety; several of the buds had died, but had remained attached long enough to inoculate the stocks, which had produced golden shoots both above and below the place where the bud had been inserted, and this was observable in several cases. I have also frequently seen in young Camellias that had been completely barked round the collar up to the surface of the soil by the larvæ of the Otiorhynchus, a large callus form on the upper side of the wound, which I always supposed to be formed by the descending sap being arrested. Perhaps some of your correspondents who hold that there is no descent of the sap will kindly explain these facts.—Chas. E. Pearson, *Chilwell, Notts.*

Lifting Potatoes and Greening them for Seed.—Now that heavy rains have set in the disease is likely to be destructive, and all Potatoes that have finished their growth, if free from disease, should at once be lifted, dried, and carefully stored in some cool, dry place. If the disease have already made its appearance, lifting will not avail much. *A propos* of lifting Potatoes in a green state, especially for seed purposes, Nicol, writing in 1802, quotes a correspondent who had proved by actual experiment that the cause of the curl—which appears to have troubled cultivators about that period the same as it did last year—lies in the seed Potatoes being over-ripened, and recommends that they should be taken up whilst the tops are green. It is, I think, a mistake to leave seed Potatoes spread out in the sun for the alleged purpose of greening or ripening them; it has an exhausting or weakening effect. An open, airy building or shed is the best place in which to store seed Potatoes for the present.—E. Hobday.

A New Anti-epileptic.—Professor Xavier Landerer, of Athens, states that he has been able to recognise in a substance that has locally acquired some reputation as a remedy against epilepsy, the root of the Clematis cirrhosa or sylvestris. In two cases of epilepsy treated with a decoction of this root, which is strongly diuretic, there has been a cessation of the attacks for more than three months. The bruised fresh leaves of the plant act as a rubefacient, and sometimes even as a vesicant when applied to tender parts of the skin.—"Pharmaceutical Journal." [This is a beautiful, hardy, winter-flowering Clematis, which we have several times recommended for planting in mild southern districts.]

Birds Protected.—The civil tribunal of Melun, in the department of the Seine-et-Marne, has decided that a landowner is not entitled to destroy upon his own property birds which feed on animals and insects injurious to his neighbours. The plaintiff in this case alleged that M. de Segonzac had ordered his gamekeeper to place upon posts, not far from his (the plaintiff's) land, snares, in which owls, bats, and other night-birds were frequently caught; that in spite of the repeated complaints made, the destruction continued, and that in consequence the mice and other vermin had increased to such an extent as to spoil his crops. The tribunal, holding that these facts, if proved, would render the defendant liable for damages, have appointed three neighbouring farmers as experts to ascertain what damage, if any, has been done to the plaintiff's crops, and whether it has been caused by animals whose presence on his land is due to the destruction of birds of prey by the defendant. In the event of their answering these two questions in the affirmative, they are to assess the amount of damage done and report to the tribunal.—*Pall Mall Gazette.*

AUGUST.

The eighth [month] was August, being rich arrayed
  In garments all of gold down to the ground:
Yet rode he not, but led a lovely maid
  Forth by the lily hand, the which was crowned
  With ears of corn, and full her hand was found.
That was the righteous Virgin, which of old
  Lived here on earth, and plenty made abound;
But after wrong was loved, and justice sold,
She left th'unrighteous world, and was to heaven extolled.

Edmund Spencer.

QUESTIONS AND ANSWERS.

Wood Ashes.—I have a considerable quantity of wood ashes from the burning of weeds and other refuse. Are they of any use mixed with earth?—M.N. —[They are useful for adding to stiff clayey soils; also for killing Moss on lawns.]

Mignonette Destroyed by Insects.—Is there any remedy for the ravages of a minute insect which attacks the roots of Mignonette? When the plants are in full vigour they suddenly droop and die: this has only been the case with mine for the last three years, but now from a good thick border I have scarcely a plant left.—M. N.

Geranium Wallichianum.—Will any of your readers kindly inform me as to the period of the year at which this Geranium should bloom? It appears to have a remarkably robust habit, and carries a dense head of charmingly-cut foliage; also is it perfectly hardy? I should likewise be pleased if I could have the name of an older trailing Geranium which has flowers of good form about the size of those of the Nemophila, and of a bright, rosy-purple colour.—A. D.

Pond Weeds.—The enclosed is a fragment of fresh-water weed, which I presume is a species of Alga or Conferva. It infests two ponds in the public park here to such an extent that, if not raked out weekly, it fills the ponds like a huge green sponge. When taken out of the water it looks like so much green baize. Last summer I observed it for the first time, when it was confined to the lower of the two ponds; but this summer it is equally bad in both. Can you inform me what it is, and how, if possible, I am to get rid of it?—John D. Mitchell, *Kimberley Park, Falmouth.* [The plant sent is Conferva littorea.]

Bedding Plants from Seed Sown in Spring.—Would some reader of The Garden be so obliging as to furnish me with a list of really effective bedding plants, which, sown in heat or otherwise in March, would flower the same summer, such, for instance, as Lobelia and Tagetes? Also kindly mention some fine-foliaged plants and their colour, the seeds of which might likewise be sown in the spring of the same year? The Dwarf Imperial Ageratum will not always flower in the same year in which it is sown, or very imperfectly. It is evidently a perennial in all its habits, and why it should be called an annual by seedsmen is strange. Castor-oil plants are very handsome this year; they have luxuriated in the heavy showers and gleams of sunshine. Associated with the ordinary bedding plants necessary for a formal set of beds, they would counteract the stiffness often disapproved of in this style of gardening.—M. S. H.

No. 303.] SATURDAY, SEPTEMBER 1, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

MR. MONRO'S FRUIT GARDEN AT BARNET.

Market fruit growers, as a rule, adhere to the beaten track followed by their ancestors, but there are a few exceptions, and in some market gardens—Mr. Monro's, for instance—we find some entirely original methods of culture adopted. His garden, consisting of several acres, is, for the most part, covered with glass. It occupies a sloping position with a southern aspect, and therefore cold winds and frosts are to a great extent avoided, in proof of which we noticed a fine crop of Apples on a plantation of vigorous young trees which exists on one side of the grounds, whilst in other gardens in the same locality, not so favourably situated, scarcely a fruit can be found. The houses consist of about twenty lean-to and span-roofed structures, varying in length from 70 ft. to 250 ft., of proportionate width, and sufficiently high to admit of all necessary operations being conveniently carried on inside, and yet not so lofty as to necessitate a waste of artificial heat. All glass structures throughout the place are heated on improved principles, many of the boilers, which are Mr. Monro's own invention, heating, in some cases, several thousand feet of piping.

Grapes.

These form one of the most important crops grown here, many houses being devoted to their culture—a fact which will be understood when it is stated that a supply of excellent Grapes is obtained from April till the following March, or at least, as Mr. Monro remarks, he can depend upon a good supply nine months out of the twelve. The varieties grown are Black Hamburgh for early fruit, and Gros Colman, Lady Downes, Black Alicante, and Muscat of Alexandria furnish the mid-season and late supplies. The principal Vinery is a span-roofed one, 200 ft. long and 20 ft. wide. The Vines are planted inside, and the roots are allowed to run both inside and out, but no pretentious border has been provided for them. Their main stems are trained under the roof in the form of arches, and now that they are loaded with fruit they present a sight unusually interesting. From this house last year 2222 bunches of ripe Grapes were cut, and this year, as far as can be judged, there is probably a larger amount. Vine borders here receive little attention beyond being forked up and manured in spring, the soil being simply that of which the garden consists, which is of a yellow clayey character. In autumn, when the Vines need but little nourishment, the borders outside are planted with Broccoli or similar vegetables that can be removed before spring, when the Vines require to be again started. Heavy mulching and feeding when they are in full fruit, and when they require nourishment most are the principal points on which Mr. Monro depends, maintaining, as he does, that whilst at rest the ground can be turned to profitable account in the way just named without injury to the Vines. In a span-roofed house, 100 ft. long, planted with late sorts, no border whatever was made in which to plant the Vines; a sunk path was simply cut through the centre of the ground on which the house stands, and the Vines were planted on each side, the main stems being trained up one side and down the other alternately; on each of these there is now an average of twenty bunches, with the form and size of which any Grape grower might well be satisfied. As regards pruning the spur system is the plan adopted; no more fire-heat than is necessary is used, but in autumn, in order to finish the fruit properly, a brisk heat with plenty of air is applied to all Vines on which any fruit is hanging. Grapes are cut for market three times a week; each time all bunches which are perfectly coloured are cut and placed stalks upwards in wicker baskets, which hold about 8 lb. each. On some occasions 1 cwt. of ripe Grapes is sent from this place at one time, these supplies, as has just been stated, being obtained during the greater part of the year. As soon as the Vines have been cleared of fruit the houses are closed for a few days and the syringe vigorously applied to the foliage to clear it of insects, &c., after which as much air as possible is admitted, and the roots receive a thorough soaking with water in order to plump up the buds and retain the foliage in a healthy state as long as possible, for whilst the fruit is ripening water is to a great extent withheld in order to improve the flavour and solidity of the berries; the roots consequently often get very dry before the crop is cleared, and hence the necessity of a good supply of water afterwards, a fact probably too often overlooked by Grape growers. A house planted fifteen months ago with small canes of Duke of Buccleuch, and only allotted a border about 2 ft. wide, has this year yielded some sixty-four good bunches of Grapes. The rods are planted closely together and fed with manure water, a system on which Mr. Monro intends to grow other Vines. He has lately planted a house 150 ft. long with young canes of Black Hamburgh for furnishing an early supply; this house, which is of singular construction, was originally intended for Cucumber culture, but these not succeeding in it so satisfactorily as could have been wished, it has now been converted into an early Vinery, a purpose for which it is considered admirably adapted. It is 20 ft. wide, and the roof, which is supported on side walls 3 ft. in height, is flat, 9 ft. fall lengthways in the roof only being allowed to throw off water. The interior arrangements consist of a series of beds, some 10 ft. wide and 15 ft. long, surrounded by low brick walls; between each of these beds are narrow paths, and also one the whole length of the house, on one side of which is likewise a bed 3 ft. wide, also the length of the house. In the centre of these beds the Vines are planted 3 ft. apart, and trained upwards, and when well established, good results in the way of large crops of Grapes may be reasonably expected. The beds are planted with Monro's Little Heath Melon, chiefly for seed; these, it might be thought, would greatly exhaust the soil, but this is easily counteracted by heavy manuring, mulching, and copious supplies of manure water whilst the Vines are in active growth; when the Melons have been cleared away, during winter this house is filled with bedding plants, which are grown here in quantity, over 30,000 being sometimes packed in one place. In spring it is used for Strawberries, and thus the whole space is kept fully occupied.

Peaches and Nectarines.

To the culture of these several large houses are devoted, and though the trees are planted outside in only the ordinary soil of the garden, the results obtained are very remarkable. Established trees in lean-to houses are trained on flat trellises fixed within 3 ft. of the glass; a path runs near the back wall, which is furnished with trees, and the ends of the shoots on the flat trellis are trained upwards, so that all available space is utilised in the most profitable manner, and yet the light and sunshine, so essential to the culture of the Peach, are in no way obstructed. A new plan as regards the growth of Peaches and Nectarines adopted here is worth notice; Mr. Monro calls it the ridge-and-furrow system, but it is, in fact, the cordon plan, which is largely practised in France. The trees, twenty-five in number, are planted 3 ft. apart, on the south side of a half-span-roofed house; their main stems are trained upwards to within 2½ ft. of the glass; each stem is furnished on both sides with healthy spurs, from which are emitted from five to eight shoots. When pruning, three or four of the best-ripened fruit-bearing growths are selected, and the rest are cut away, leaving in all cases a few eyes to furnish young shoots during the ensuing summer for supplying the next year's crop. The shoots which are left for fruit-bearing are not trained out horizontally, as is generally done in the case of Vines; on the contrary, they are trained towards the glass, and thus form, as it were, a ridge and furrow. The kinds of Peaches grown are Royal George, Noblesse, Grosse Mignonne, Late Admirable, Barrington, and other sorts, which naturally succeed each other, thereby prolonging the season during which fruit can be had in good condition. The Nectarines consist of such kinds as Violette Hâtive, Balgowan, and other popular sorts, all of which succeed on this system remarkably well. From this house Mr. Monro has this year gathered nearly 1500 large and excellent fruits, which have found a ready sale at good prices in the market. The house is started in January, the trees being brought on gradually, and gathering commences towards the end of July, and until the beginning of August an abundant supply of fruit is obtained. The trees have only been planted three years, and so satisfactory have been the results that it is proposed to do away with trees trained in other ways and replace them with cordons—for whilst complaints are this year being made about Peaches falling off, these trees have carried a crop that would surprise many of our best fruit growers, three, four, and five large fruits being observable on single shoots. In order to still further utilise space, it is proposed next year to lower the main stems of the trees and train the shoots in a more upright way towards the glass, which it is considered will be an improvement. As yet the trees have only covered one side of the roof, but it is intended to train them down the other side, which is, however, for the time being planted with Tomatoes, on which there is a heavy crop—a result only attained by constant stopping of the young growths and the removal of superfluous foliage, so as to throw the vigour of the plants into the fruit. Peach trees, after being cleared of fruit, are well watered and the leaves kept well syringed, all air and sunshine possible being admitted in order to thoroughly mature the wood and buds. As soon as the leaves have fallen, all shoots which have borne fruit are cut back, and the young growths which have been selected for bearing next year are laid in their places.

Strawberries.

These are only grown for forcing purposes, some 9000 plants being annually fruited in pots. In the culture of Strawberries Mr. Monro's method differs from that generally practised. A plantation out-of-doors is always kept to supply runners, but instead of waiting until these have attained a good size, and layering them in pots (as is generally done), as soon as runners can be had with a pair of good leaves, they are severed from the plants and dibbled ten or twelve together in 6-in. pots filled with sharp sandy soil; they are then placed in a warm temperature, such as a Cucumber or Melon house, where a little shade and a moist atmosphere can be afforded them. When well rooted, they are shaken out of the pots and potted singly in 3-in. pots, and again placed in a warm house until they have become established, when they are hardened off and placed out-of-doors. Early in August they are potted into their fruiting pots in good, rich, stiff loam, and placed in an open, sunny situation on a bed of ashes, where they receive plenty of water, and all runners are kept regularly cleared from the plants, which are encouraged to ripen their crowns well before wet weather sets in, a point on which ultimate success greatly depends. Plants which have been forced are also used for that purpose a second time. As soon as the fruit has been gathered from them, they are hardened off and placed closely together out-of-doors in a shady situation, and are given plenty of water, and otherwise well attended to. In July they are shaken out of their pots and planted in well-prepared ground for a few weeks, where they get well hardened, and make a quantity of new roots close to the stems; they are then taken up, all the old roots cut off, and the stems cleared of dead leaves, &c.; the plants are then placed in their fruiting pots. Thus treated, they produce fruit quite as plentiful and good as that from runners. Strawberries here are placed in cold pits, &c., when bad weather sets in, and batches of about 1000 at a time are taken to Cucumber and Melon houses until they are in bloom, when they are removed to a more airy place to set their fruit; and when fully set they are placed in the large, flat-roofed house, already alluded to, to ripen, which by this time will have been cleared of bedding plants. Sir Charles Napier is the only kind of Strawberry grown here; its fine appearance makes it a good market fruit, and being firm-fleshed, it sustains little injury from travelling.

Cucumbers and Melons.

Many large houses are here devoted to the culture of these fruits, and the quantities cut every year for market are almost incredible. In one year over 25,000 Cucumbers were sent from this place to London, which represents some £533. These are principally grown in low span-roofed houses, with 3-ft. beds on each side, and in some cases a bed in the centre is devoted to Melons, the Cucumber plants at the sides being kept sufficiently within bounds not to injure the Melons by their shade. The Cucumber seeds are sown in the autumn, from which strong plants are obtained to furnish the winter supply; these are planted in loam and manure, and continue in bearing until spring, when they are succeeded by others planted out later in the season. During the summer Cucumbers are not grown here to any great extent, as, owing to such large quantities of outdoor or frame-grown ones coming from all the market gardens round London, house room is too valuable to be occupied by them. When the crops of Cucumbers are on the decline in summer the beds are covered with warm manure, spawned, and converted into Mushroom beds, from which bushels of good Mushrooms are gathered throughout the winter. The Cucumbers are then allowed to grow at will or die, but are not pulled up, as the foliage even when dead helps to darken the house, and thus furthers the growth of the Mushrooms. In Vineries, too, where no Vine roots exist in the inside borders Mushroom beds are made, *i.e.*, when sufficient heat is kept up in the houses to be favourable to their growth, which happens of course early in the spring. Perhaps this is as profitable a crop as can be employed to occupy such spare spaces, and if private growers, who are often short of a supply of Mushrooms, were to make up little beds in succession in similar positions, they would probably always have plenty. Melons, as before stated, are chiefly grown for seed, the large quantities of foreign fruit sent to market rendering the prices too low to be remunerative. Indeed, under any circumstances, Melons are not considered a paying market crop.

Pelargoniums of the Zonal and Variegated sections form the bulk of the plants grown here; these are struck in August from cuttings obtained from plants planted out for the purpose. They are roughly cut into shape and placed thickly in beds of sandy loam, surrounded by low, brick walls. When callused, these cuttings are taken up and potted. The chief aim here is to use all space to the best advantage; and valuable as land is near London, some is here spared for a few outdoor Roses and other flowers, which are planted round a well-kept Grass plot, giving the place a more interesting appearance than is to be seen generally in market gardens.

C. W. S.

The Caper Plant Hardy in England.—In the interesting account of the Capers (see p. 181), it is stated that Capparis spinosa is difficult to grow in this country, and greenhouse treatment is recommended for it: but the plant is perfectly hardy, and with a little care is very easy of management. It has been grown for many years at the Oxford Botanic Gardens, and I have had it here for the last four years, and this year it has been flowering very freely. I believe the secret of success to consist in only putting out well-established plants—young plants would be apt to perish. Plant it close inside a south wall, and if some stones be placed over it, it will find its way through them and trail very prettily over them; or it may be trained to the wall. It will entirely die down in the winter, but when in flower it is one of the prettiest plants that can be grown.—Henry N. Ellacombe, *Bitton Vicarage.*

English Names for Ranunculuses.—In describing two old garden favourites the other day in your weekly account of hardy flowers, you do not give their quaint old-fashioned names. The Double Ranunculus acris is well known in all old gardens as Bachelor's Button. The French call it Bouton d'or, and a particular kind of rich gold colour is always called Bouton d'or, after the time-out-of-mind old garden favourite. The double variety of a white Ranunculus—also an old garden favourite—is called Fair Maid of France, the double variety having perhaps been first introduced from France, as were many of our oldest garden flowers.—H. Noel Humphreys.

The Artillery Plant for Window Gardens.—A lady friend of ours has a large specimen of this curious plant, which she has grown since last autumn, in her kitchen window, and it has given her more satisfaction than all her other garden inmates. It kept constantly green and growing, and as sunlight increased its mantle of miniature muskets thickened, till now it represents a model umbrageous tree, with boughs so succulent and heavy that a rough shake or breath would seem to shatter them. Associated with Oxalises, Mahernia verticillata, Petunias, and a few others, it made January look like May. A great addition to this kitchen window in mid-winter was the festooned drapery of the Madeira Vine.—"Gardener's Monthly."

NOTES OF THE WEEK.

Barber-ous Horticulture.—The "carpet bedding" which now does duty for flower gardening in so many places requires a good deal too much attention for its importance. In the London parks now men may be seen in the early morning armed with shear-like scissors, with which some of the poor little plants are clipped when they show themselves above the desired "carpet" level. Others will not bear clipping without suffering, and these the men have to mutilate with the finger and thumb. The result is sometimes described as "splendid," &c., but it is not gardening.

Spanish Melons.—Some of the usually despised Spanish Melons now sold so cheaply in our markets are really of a fine and peculiar flavour, which is distinct from that of our Melons, or from that of the deep-ribbed Paris Melon, being as rich as either and yet having a coolness and piquancy which is delicious to those accustomed to the often flat flavour of our Melons. It is noticeable that these Melons are cut while green, and some of the most deliciously-flavoured of them that we have tasted were as green about the junction of stalk and fruit as a young Crab Apple.

A Lost Beauty Refound (Milla biflora).—This fine plant, long lost, is now in cultivation in a Continental garden, whence we hope it will some day again be distributed. The plant will not bear being handled at the bulb, nor being kept long out of the ground. It is a stately and lovely plant with pure white flowers.

Bouvardia Humboldti corymbiflora.—This large-flowering form of the well-known B. jasminiflora, so extensively grown for the London markets, is fast gaining favour with both florists and private growers. It is a free-growing plant, which yields clusters of handsome blossoms almost equal, as regards scent, to those of the well-known Stephanotis, for several months in succession, provided it is kept free from insects and has occasional applications of liquid manure supplied to the roots while it is in flower.—S.

Satyriums.—Two interesting and novel representatives of this family of hardy Orchids are now in bloom in the Tottenham nurseries, S. carneum and S. aureum. The first-named has flowers of a delicate rose, and is a handsome plant. Leucojum autumnale, Lilium Leichtlini, Hyacinthus candicans, and many other good hardy plants are also in flower in the same place.

A New Balkan Plant (Haberlea rhodopensis).—This is a beautiful hardy plant, a native of Kalifer in the Balkans. In habit it resembles a Ramondia, the individual flowers being somewhat like those of the Catalpa, but of a bluish-lilac tint, and with a yellow throat. The plant has somewhat the appearance of a miniature Gloxinia, every rosette of leaves throws up from one to four flower-stalks, each with from two to four flowers. It blooms at the end of April in the open air, and is a fine plant for the rock garden.—M. L.

Planting in Hyde Park.—"I would respectfully recommend the following extract from an American work to Mr. Gerard Noel. It occurs in an account of Hyde Park in the 'American Cyclopædia,' under the heading 'Parks':—'The old trees are disappearing more rapidly than the young ones are brought forward; the turf is not well kept, and to avoid its destruction in many parts iron hurdles are placed along the walk. It is thus gradually losing its beauty as a park, for which its streaks of fine gardening here and there offer no compensation.' Really, I am afraid there is a good deal of truth in our American critic's remarks. Hyde Park is hardly kept up as it ought to be, and is by no means increasing in beauty."—"The World." [There is some truth in this so far as the trees are concerned. There is no attention paid to annual planting of fine trees and shrubs in our parks, parks which, on the other hand, are having a mad race with each other in the building of villages of glass houses for the subtropical and other plants which help to make up the evanescent bedding in autumn. This need not be done away with wholly, but ought certainly to be made subordinate to preparations for the permanent planting of the parks and for features which improve with time.]

The Lavenders.—The Lavender (Lavandula vera) is now in full perfection. The fragrant blue flowers are arranged in axillary cymes, most of which are so close together as to form an uninterrupted spike. The floral leaves or outer bracts are rhomboidal and tapering, of a brown colour; those under each flower much smaller and narrower, but of the same colour. The calyx is nearly cylindrical and ribbed, with many veins, but is only furnished with one small tooth, which may be seen at the back of the flower; the corolla is two-lipped and of a deeper tint on its inner surface than on its outer. The lower verticillasters are often somewhat widely separated. In the Lavandula spica, which yields the oil of spike, there are very few characters by which it can be distinguished from L. vera. It has, however, a denser habit and whiter aspect, and the spike is shorter and less interrupted, and it is more susceptible of cold, extending less far north than L. vera. As cultivated in botanical gardens in this country, its odour is scarcely to be distinguished from that of L. vera, and the inferiority of the oil of spike or essence d'aspic is probably caused by the use of the whole plant in distillation.—"Pharmaceutical Journal."

Canna viridiflora.—Herr Max Leichtlin informs us that this plant (recently alluded in The Garden) requires to be kept growing all the winter in a warm house. In Germany (Munich), as in Paris, it flowers well in the open air.

Wreck of the Potato Crop.—The Potato disease has followed the track of the thunderstorms and heavy rains which we have lately had, and the result is total destruction. There has been no attack so swift, so general, so complete for twenty or more years. Large plots of Potatoes, sound and healthy to-day, are converted into masses of rotten stems and putrid tubers to-morrow. It seems as if the lightning, of which there has recently been so much, had run across the Potato field, and scathed and destroyed the plants utterly, root and branch. A month or two ago the Potato crops never looked finer or better; now they have never been so bad. Unless the rain ceases and the sun shines forth with power this autumn-tide, it seems as if Potatoes must be wholly lost. We have had almost a month of intermittent thunderstorms and pouring rain, with a few most severe tempests—all favouring disease, and nothing but an intense drought, of which there is at present no sign, will save a mere remnant of the best Potato crop of modern times for seed. The prospect is gloomy in the extreme, and even within the last twenty-four hours enough rain has fallen to half wash the Potato crop out of the ground. The advice to store early is too late now. After the disease is abroad in such force, the Potatoes rot as fast after they are taken up as before. There seems nothing to do but to collect the diseased tops, where any are left, and burn them, and wait for fine weather to harvest any tubers left sound.—D. T. Fish.

Floral Decorations at the Agricultural Hall.—Flowers when associated with music, as is now the case at the Agricultural Hall, afford perhaps the most efficient means of diffusing a love for them amongst townspeople. With this view floral arrangements on a liberal scale have been made in connection with a series of musical concerts held in the Hall just named. Mr. B. S. Williams and Mr. Wills furnished large collections of valuable Palms, Crotons, and other fine-leaved plants intermixed with Lilies, Orchids, Pitcher-plants, and other showy subjects, which were in some cases edged with a carpet of Club Mosses, in which were inserted choice cut flowers. We also noticed groups of Gladioli, around the bases of which were arranged Maiden-hair and other Ferns. Mr. Charles Turner, of Slough, contributed a fine collection of Liliums, effectively intermixed with fine-leaved plants, which by gaslight showed themselves off to good advantage. Mr. Ley, of Croydon, and Mr. Peed, of Norwood, also exhibited good collections of plants. Garden fountains and other ornaments were supplied by Messrs. Dick Radclyffe & Co. As in all other displays of this kind, there was room for improvement; but on the whole the arrangements were good, except that in the place of coloured flags which were suspended in great numbers from the roof, there might have been substituted a few hanging baskets of plants, if only of a common character. Semi-circular raised beds covered with turf were formed in various places on the floor of the Hall, and in these were tastefully and happily disposed light and elegant, fine-foliaged, and attractive-flowering plants, among which in some cases were introduced Pine-apples in fruit, and Grapes, Figs, Peaches, and other fruits in dishes. The prizes amounted to about £300, the principal one being £50.

Pentstemon lætus.—The number of blue-flowered Pentstemons, though much increased by recent introductions, is still sufficiently restricted to render acceptable any desirable addition to their ranks. The present plant is a close ally of P. azureus and P. heterophyllus, and like them is of dwarf branching habit, with linear-lanceolate to spathulate foliage, and blue flowers in terminal raceme-like panicles, but differs also from both the above species in the greyish glandular pubescence with which it is clothed, more especially the young growth. The foliage is also more fleshy, and occasionally toothed. The corolla is about 1 in. long, of an agreeable light blue, the lower lip being usually marked with two conspicuous white lines. It grows about 1½ ft. high, and blooms in July and August. It is a native of California, and is probably as hardy as most of the species from that region.—W. Thompson, *Ipswich.*

NOTES ON OUTDOOR PLANTS FROM EDINBURGH.

Owing to the long rains and almost sunless summer which we have had, rain falling frequently and more or less nearly every day during the last seven weeks, summer bedding plants, as well as those employed for perennial herbaceous borders, have this year been a comparative failure; of rock garden plants even, which are generally gay at this season, comparatively few are now in a free-blooming state, but they are generally in a healthy, though perhaps over-vigorous condition, in consequence of the moisture. With the exception of some late-flowering Liliums, such as L. auratum, Humboldti, Bloomerianum, Michauxi, and others, the hardy autumn-flowering Heaths, Dabæcias, Andromedas, Gaultherias, and Yuccas, together with others recorded in the following list, at the present time only 126 species and varieties, exclusive of duplicates, can be counted in bloom. The list includes kinds selected for observation as to their yearly periods of flowering, and may be useful to those choosing plants to flower on their rock gardens during the month of August.

Androsace lanuginosa
Arnebia echioides
Bellis rotundifolia cœrulea
Calochortus luteus
Campanula isophylla alba
Campanula turbinata
Campanula turbinata alba
Cyananthus lobatus
Dianthus alpinus
Dianthus deltoides
Dianthus dentosus
Disa grandiflora
Eriogonum aureum
Funkia lanceolata alba
Gaultheria numularifolia
Gentiana asclepiadea alba
Gentiana gelida
Gentiana ornata
Gentiana Wallichi
Gladiolus Pottsi
Gypsophila arenaria
Itea virginica
Linaria alpina
Lithospermum fruticosum
Meconopsis Wallichi
Nertera depressa
Orobanchi rubra
Papaver alpinum album
Papaver alpinum croceum
Pterocephalus Parnassi
Santolina Chamæcyparissus
Schizostylis coccineus
Sedum cyaneum
Sedum denticulatum
Sedum ibericum
Sedum kamtschaticum
Silene Shaftæ
Teucrium pyrenaicum
Thymus alpinus
Veronica alpestris
Veronica maritima alba
Veronica spicata
Yucca angustifolia

Royal Botanic Gardens, Edinburgh. James M'Nab.

ARRANGING CUT FLOWERS.

Many who have flowers do not at all know how to arrange them so as to produce the best effect, while others seem born with a knack for doing such things in just the right way. Taste cannot be taught, but there are a few rules and principles on the subject so simple that any one can understand and follow them, and if people will keep them in mind when they have flowers to arrange, I think they will find them helpful. Just as flowers are the most beautiful decoration which any house can have, so the proper management of them is one of the most graceful of arts, and everything which makes home prettier and more attractive is worth study and pains.

1st. The colour of the vase to be used is of importance. Gaudy reds and blues should never be chosen, for they conflict with the delicate hues of the flowers. Bronze or black vases, dark green, pure white, or silver, always produce a good effect, and so does a straw basket, while clear glass, which shows the graceful clasping of the stems, is perhaps the prettiest of all.

2nd. The shape of the vase should also be considered. For the middle of a dinner table a round bowl is always appropriate, or a tall vase with a saucer-shaped base; or if the centre of the table be otherwise occupied, a large conch shell or shell-shaped dish may be swung from the chandelier above, and with plenty of drooping spray and feathering green made to look very pretty. Delicate flowers, such as Lilies of the Valley and Sweet Peas, should be placed by themselves in slender, tapering glasses; Violets should nestle their fragrant purple in some small cup; and Pansies be set in groups, with no gayer flowers to subdue their soft, velvety hues; and—this is a hint for summer—few things are prettier than Balsam blossoms, or double variegated Hollyhocks, massed on a flat plate, with a fringe of green to hide the edge. No leaves should be interspersed with these; the plate should look like a solid mosaic of good colour.

3rd. Stiffness and crowding are the two things to be specially avoided in arranging flowers. What can be uglier than the great tasteless bunches into which the ordinary florist ties his wares, or what more extravagant? A skilful person will untie one of these, and, adding green leaves, make the same flowers into half-a-dozen bouquets, each more attractive than the original. Flowers should be grouped as they grow, with a cloud of light foliage in and about them to set off their forms and colours.

4th. It is best, as a rule, not to put more than one or two sorts of flowers into the same vase. A great bush with Roses, Camellias, Carnations, Feverfew, and Pelargoniums growing on it all at once would be a frightful thing to behold, and the same remark applies to a bouquet made up of all these flowers. Certain flowers, such as Heliotrope, Mignonette, and Myrtle, mix well with everything; but usually it is better to group flowers with their kind—Roses in one glass, Geraniums in another, and not try to make them agree in companies.

5th. When you do mix flowers be careful not to put colours which clash side by side. Scarlets and pinks spoil each other; so do blues and purples, and yellows and mauves. If your vase or dish be a very large one, to hold a great number of flowers, it is a good plan to divide it into thirds or quarters, making each division perfectly harmonious within itself, and then blend the whole with lines of green and white, and soft neutral tints. Every group of mixed flowers requires one little touch of yellow to make it vivid; but this must be skilfully applied. It is a good practice to experiment with this effect. For instance, arrange a group of maroon, scarlet, and white Geraniums with green leaves, and add a single blossom of gold-coloured Calceolaria; you will see at once that the whole bouquet seems to flash out and become more brilliant.

Lastly. Love your flowers. By some subtle sense they always detect their friends, and for them they will live longer and bloom more freely than they ever will for a stranger. And I can assert from experience that the sympathy of a flower is worth winning, as will be found out when people grow older, and realise that there are such things as dull days which need cheering.—"St. Nicholas."

Water Chestnut (Trapa natans).—This interesting aquatic plant, of which you have given an illustration (see p. 193), has white flowers with purple claws that float on the surface of the water among the foliage, the petioles being inflated similar to those of some of the marine Algæ. The fruit, which is about the size of a Filbert, is very farinaceous. In the south of Europe, where it is abundant, it is made into bread; in France it is known as Chataigne d'Eau; it is sold in the market at Venice as Jesuit's Nut, and is eaten after the manner of Chestnuts. It is sometimes called Water Caltrops, from the resemblance which the fruit bears to the spiked iron instrument (calcitrata), which was used in ancient warfare for strewing the ground to impede the progress of cavalry. It is only an annual, but still it can be grown in many parts of this country, and I have no doubt naturalized, and as it is exceedingly pretty when in bloom, it is well worth trying everywhere. It will grow in water 2 ft. to 3 ft. deep, and I should think wherever the Aponogeton distachyon would grow the Water Chestnut would succeed.—A. P.

Spent Bark for Covering Flower Borders.—This material, extensively used in some places for many years past, is invaluable to those whose gardens are liable to suffer from drought. I have a border here, under a wall, the soil of which is light and sandy, and where, during the hot days, we have been obliged to water plants and young trees, sometimes twice a day, to keep them alive. Lately I had nearly the whole of it first well watered, and then covered with about 3 in. of well-rotted spent bark. After about three or four weeks' almost daily exposure to a burning sun, I had it uncovered in several places, and found that the soil was still thoroughly moist, though no rain had fallen, nor had it been once watered. After a free use of it for some time, I am convinced that about three-fourths of the labour of watering is saved by the mulching, and the appearance of the beds is improved. I would strongly recommend 2 in. at least being used, more if possible, as it not only keeps the ground moist, but prevents weeds to a great extent from growing. The bark should be well rotted, even to soil, as was advised by a writer in The Garden some months since.—C. F., *Merlwood, Parkstone.*

Green Crops for Orchards.—Mr. Yeomans, of Walworth, N.Y., enriches the land of his extensive and successful orchards by sowing Rye in the autumn, and when in full green head, ploughing under, following with sowed corn, to be ploughed under late in the season.

Cultivated Peach Orchards.—A correspondent of the "Michigan Farmer" mentions a strong case showing the advantage of placing Peach orchards on elevated ground, and away from frosty valleys. At Paw Paw, 25 miles east of Lake Michigan, and beyond what is termed the "fruit belt," no Peach buds have escaped the frost of the past winter on level ground. On all elevations of 50 ft. or more all are alive; lower down the tops of tall trees have a few buds that have escaped. On the range of hills in that region, all the trees were loaded with blossoms from top to bottom.—"Country Gentleman."

THE INDOOR GARDEN.

PROPAGATING CENTAUREAS.

Allow me to supplement Mr. Groom's remarks on this subject (see p. 155) with a little of my own experience in this matter. I know that the method described by Mr. Groom is a good and simple one, having practised it myself to a considerable extent. It often happens, however, that a considerable quantity of this plant is required, and that but a limited stock of it is possessed from which to propagate, and as the shoots available for cuttings during the summer are comparatively few, it follows that the process of working up a good stock is somewhat slow. Some years ago, when the great demand for these white-leaved plants set in, and when C. candidissima was hardly procurable in any quantity, the following method of increasing it was adopted, and found both easy and expeditious. Some good strong plants, well established in 8½-in. pots, were introduced into gentle heat in January; these plants possessed each some half-dozen shoots, the ends of which were removed with a sharp knife, and some of the old lower leaves were cut away close to the stem. The result of this treatment was that a number of very small shoots were produced up the stem; these, coming quite green, were free from that woolliness which characterises the plant, and which is the great obstacle to success as regards propagation. The cuttings, as they were taken off, were inserted in thumb-pots and placed on a brisk bottom-heat, where they quickly rooted at the rate of 95 per cent. This method of propagation may be continued several months, as if the plants which furnish the cuttings be kept in health fresh shoots will be formed in succession to those removed. I have since on several occasions employed this method of working up a quantity of C. candidissima, the species to which my experience has been mainly confined, but the other kinds may doubtless be similarly treated. If I had a good stock from which to cut, I should, I must confess, prefer treating them according to Mr. Groom's instructions, but in the case of those who possess but a few plants, and who are nevertheless desirous of making the most of them, I would say pot them now so that they may be firmly established before winter. As the cuttings root they should be carefully shifted into 3-in. pots, and when established removed to a cool house. I have remarked that these young plants are characterised by a very free after-growth. J. Cornhill.

Byfleet.

Kentia Canterburyana (Veitchi).

KENTIA CANTERBURYANA (VEITCHI).

Few Palms are more handsome than this, and being of moderate growth, it is suitable for pot culture. It is a native of Lord Howe's Island; it is not an overquick grower, especially if somewhat confined as regards root-room, and consequently can be kept for a considerable time within the limits of a medium-sized house: neither does it require a strong heat, another important consideration with many who are desirous of cultivating Palms, but have not the convenience of a house wherein so much heat can be kept up as is needed by many of these exquisitely beautiful plants. Like most other Palms, it will grow in either peat or loam intermixed with broken crocks or charcoal and sand, so as to maintain the porosite rendered necessary by the liberal applications of water required by it, especially during its season of growth. It should have a little shade in very bright weather, or the leaves are apt to become somewhat yellow, a circumstance which impairs their beauty. It forms a good centre plant for a moderate-sized house, contrasting as well with flowering as with other fine-leaved subjects. T. Baines.

CAMPANULA PYRAMIDALIS IN CONSERVATORIES.

This is by no means an ineffective plant for conservatory decoration, and its requiring no extraordinary amount of skill or space for its development ought to be a sufficient recommendation for its more general cultivation. It also forms beautiful beds by stopping the leaders when about 1 ft. high, and associates well with sub-tropical plants. Seeds of it sown during the months of June, July, and the first week of August will be sure to make fine plants, suitable for any of the above-mentioned purposes, during the ensuing summer and autumn months. The seeds being small, it is not easy to sow them as regularly as might be desirable; therefore, as soon as they have vegetated and formed one or two of their small but perfect leaves, they will require thinning, at the same time removing carefully Grasses or any other seedling weeds that may chance to make their appearance among them. Although a hardier and more easily-grown plant than the Chinese Primrose or herbaceous Calceolarias, I treat the seed and seedlings in the first stage of their growth after the manner prescribed for these, sowing on the surface of previously-watered sandy loam and covering it with a piece of glass until germination has taken place; when fit to handle, the young plants are pricked off singly into soil of a similar character in small pots, which are then placed in coal ashes in a frame pretty close to the glass (within 6 in. or 8 in.), kept close for a day or two, and shaded if necessary, after which air and light are admitted freely. They must be afterwards well attended to as regards watering and repotting. The soil I find most suitable for subsequent use is a good fibry loam. If not naturally open, it should be made so by the addition of sharp river sand, leaf-mould, and well-decomposed hotbed or cow manure, the quality of the whole being regulated to suit the plant and size of shift required. Frequent applications of manure-water will greatly benefit early-raised plants both now and on the return of spring, when they should receive their last shift. By following that course, I find that 9-in. pots are large enough in which to grow specimens with large leaves, which completely hide the pots from view, and beautifully-furnished flower-spikes from 8 ft. to 9 ft. high. Those planted out during the last week in May are equally tall and well furnished, but the flowers are not so large or so brilliant as those indoors. After the last shift, and when the future flower-spikes have lengthened from 9 in. to 12 in., if checked by removing the top, the plants will become very compact, and can be advantageously used in many ways out-of-doors during the summer and autumn months.—"Gardeners' Record." [The white variety of this Campanula is one of the most desirable plants for the conservatory or greenhouse at this season. Its tall, white spikes, looking so cool and beautiful, are as fair as the costliest plants that may be grown for indoor decoration.]

Sweet Peas in Spring.—These, if sown now in 6-in. pots and moved under glass before frost occurs, will make useful early decorative plants for the greenhouse, or for supplying cut flowers.—E. Hobday.

Finely-flowered Peristeria elata.—A plant of the Peristeria elata, or Dove Orchid, so well represented in The Garden last week (see p. 153), is now in flower in the Birmingham Botanic Garden, where it is bearing about forty-five flowers and buds on two spikes.—W. B. Latham.

THE FLOWER GARDEN.

TUBEROUS-ROOTED BEGONIAS FOR BEDDING PURPOSES.

No one who has not seen these most beautiful and invaluable plants, either bedded out in masses in circular beds slightly raised in the centre, or as single specimens each in the centre of a small round bed edged with a good Lobelia, or in a narrow border in front of a greenhouse, each plant framed in a ring of the ornamental Polemonium variegatum, can form any adequate idea of what a brilliant and continuous display of colour they provide during the whole of the three summer months from the middle of June to the middle of September. Then they may be lifted with good balls of earth, and without the slightest check put into pots for the decoration of the late autumn conservatory, where most of them will continue to bloom for another six weeks or two months, many of them not going to rest for the winter till the middle of November. Another great and conspicuous merit possessed by these plants is that even when in full bloom they are almost insensible of the heaviest rain, as torrents, which would knock every blossom off a bed of Zonal Pelargoniums, do not cause a single bloom to drop before its time, merely making the pliant foot-stalks bend their heads to the storm, raising their lovely blossoms in all their brilliancy and beauty on the reappearance of the sun when the storm has passed. They are also of exceedingly quick growth, and should the bed become too crowded from having had too many plants put into it when they were in a small state, those that are in excess and interfering with the others may be moved into another bed, even when in full bloom and in the height of summer without undergoing the slightest check or interruption from the move, a good watering immediately after lifting has taken place being all that is required to establish the plant in its new position. They have also but few faults worth mentioning, the chief ones being that some of the varieties drop all their male blossoms (which, being invariably finer, larger, and of more perfect shape than the females, are a great loss) in a bud state unopened. Specially remarkable for this great drawback are Van Houtte's varieties, Mlle. A. Zimmermann of 1876 and Léon Plisson of 1875, and M. Deleuil's fine-foliaged and otherwise charming and novel-coloured variety carnicolor. Other fine varieties drop about half of their male blooms unopened and expand the remainder; as an instance of this mitigated fault may be cited M. Fontaine's fine and brilliant Mons. Bienaimé. The tubers also, though apparently quite sound, sometimes refuse to start into growth when the season comes, nor can they be made to do so, artificial or bottom heat being of no use whatever for this purpose, and usually, when applied, merely resulting in causing the tuber to decay. The tubers when at rest are also unfortunately subject to the attacks of a white larva or grub of some kind, the eggs of which seem to be deposited in the earth of the pot, and the grub, if not discovered and removed in time, usually eating its way through the tuber and causing it to decay; the pots should therefore be got out, and each tuber carefully examined two or three times during the winter for the removal of these insect pests. The best and most distinct-coloured varieties now in cultivation are as follow, sent out by the well-known house of Van Houtte, at Ghent, in the present year:—James Backhouse, Laurent Descours, Baronne Hruby, and Notaire Beaucarne; in 1876 Madame Oscar Lamarche; in 1875 Paul Masurel, F. Lecomte, F. Siesmeyer, and Massange de Louvrex; and in 1874 Charles Raes by M. Victor Lemoine, of Nancy, France; in the present year Jules Janin, and W. E. Gumbleton; in 1876 Diamant, Oriflamme, Monsieur Marcotte, El Dorado (valuable as being the only real yellow as yet in cultivation); and in previous years Wilhelm Liebnecht, Rubens, Etna, Velours, and Corail Rose. To this raiser is also due the credit of sending out all the double-flowered varieties as yet in cultivation, most of which are very beautiful, though, as may not be known to many, only the male blooms are double, the female being invariably single only. First and most beautiful of these stands Gloire de Nancy, on which the number of male blooms produced largely preponderates over the females, consequently the very large majority of blooms are double. This extra fine variety is followed in order of merit by Lemoinei, Louis Thibaut, Louis Van Houtte, Salmonea-plena, Balsaminiæflora. M. Fontaine, gardener to a private gentleman in the neighbourhood of Paris, has also raised and sent out through Messrs. Thibaut & Retteleer, the well-known nurserymen at Sceaux, the following beautiful varieties:—Monsieur Bienaimé, Lelia Hebé, and Mons. Pigny; a still more beautiful variety not yet sent out has also been raised by M. Fontaine, and named Exposition de Sceaux. M. J. B. Deleuil, of Marseilles, has also sent out Petrarque, Bayard, and Cleopatre. M. Vincent, of Bougival, has sent out a most beautiful and free-flowering cream-coloured variety, named Reine de Bougival. From Messrs. Veitch, of Chelsea, we have the fine varieties Acme and Kallista, sent out last year, and Vesuvius in 1875. M. Otto Frœbel, of Zurich, has sent out the only pure white variety we have yet seen, under the very appropriate name of Mont Blanc.

W. E. Gumbleton.

—— Since Fuchsias were first taken in hand by hybridists, and the usefulness of the many fine varieties raised both for outdoor and indoor decorative purposes proved, it is a question if we have had any plants equal to them, unless it be the new race of tuberous-rooted Begonias, in which such advances have been made during the last few years. We have been so accustomed to associate the name Begonia with plants that almost all require considerable warmth, that many who have heard of, but not seen, the tuberous kinds grown in the open air, are slow to believe how well they succeed under such treatment; the fact is, that heat spoils them completely, and they are as much superior out-of-doors to what they are even in a cool greenhouse as they are in the temperature of the latter over that of an intermediate house or stove. Of this I felt more than ever convinced the other day, on looking over Messrs. Veitch's collection of seedlings at Chelsea; here they may be seen in every shade of colour, from the palest flesh to the deepest crimson; and in form varying from the large, broad, stout-petalled varieties, to the long, narrow, more elegant, drooping forms, clothed with a profusion of brilliant blossoms, the colours of which are intensified by open-air cultivation to an extent that would scarcely be credited by those who have not seen them. In addition to this, the other important point gained is a much closer, compact condition of growth, the leaves being, as might be imagined, much smaller, showing the flowers off to better advantage. For cool greenhouse decoration, the length of time they continue to bloom, their adaptability for cutting, and easy culture, commend them to all who grow flowers for such purposes. When grown out-of-doors, one great advantage they possess over most other plants is that no amount of wet appears to have the slightest influence in damaging their flowers, which they go on producing until cut off by frost. In the most favoured localities the roots, if left out through the winter, will sometimes survive, but it is better to take them up. For planting on rockwork, these Begonias have few equals.

T. B.

AMPELOPSIS VEITCHI.

Amongst the great numbers of new plants that yearly make their appearance often with highly pretentious characters, it must be confessed that there are many more blanks than prizes in the shape of novelties that by their real merits are entitled to supplant established favourites. This holds good as regards both outdoor and indoor subjects, and it makes the majority of people cautious as to giving preference to any new comer until it has fully proved its superiority. As a plant for covering walls, draping verandahs, balconies, or any similar purposes, especially in towns where anything to be of use must have a free, vigorous habit so that it can succeed under adverse conditions of both soil and climate, the old Virginian Creeper (Ampelopsis hederacea) has long stood unrivalled; but from what I have seen of the more recently introduced Ampelopsis Veitchi, I feel convinced that it is destined to supplant the old species; in rapidity of growth under equal conditions, A. Veitchi appears to outstrip the old kind completely, the leaves having a more glossy and pleasing appearance; but the greatest advantage it possesses is that it requires no training, clinging to the bare wall as fast and with more certainty than Ivy. It may be seen from Messrs. Veitch's Nursery, Chelsea, on some of the houses adjoining, closely clinging to the walls, yet withal hanging in graceful festoons from the eaves of three or four storey buildings, in some cases making its way on to the slates, and completely enveloping the chimney-pots. I have been told by a person who has it growing over the south side of his house that he never before experienced so much comfort in his bedroom during hot weather, as it effectually wards off the rays of the sun, and owing to the rapidity of its growth little time elapses before it covers a large surface. In autumn its leaves, like those of the common Virginian Creeper, acquire a brilliant colour, and I have no doubt that, when better known, it will become employed in such places and for such purposes for which the old Virginian Creeper has been almost exclusively used. T. B.

MACLEAYA (BOCCONIA) CORDATA.

This, as will be seen by the annexed illustration, is a handsome herbaceous plant, now and then grown in English gardens, and a native of China. The foliage is large and graceful, and the feathery panicles of flowers possess a peculiar charm at this season of the year. For the wild garden it is one of the best plants with which I am acquainted; it has also a fine appearance isolated on lawns. It is, however, hardly adapted for the herbaceous border unless precaution is taken to pull up every year such shoots as stray away from the main plant; if this be done it can be kept from interfering with its neighbours, and that portion which remains is thereby strengthened. If very fine specimens be desired, the plant itself even should be thinned by pulling out all weak shoots when about 6 in. high. It is quite hardy, and appears to be passing under several names, but the one given above is the correct one. B. frutescens, a shrubby species from the West Indies, is very handsome in pots, but not hardy. A. P.

Macleaya (Bocconia) cordata.

Iridescent Moss.—There is near Portsmouth, Lancashire, a narrow tunnel, made by miners for the purpose of working the coal. This tunnel is many years old, and its sides are covered with a very minute Moss, which, when seen from the mouth of the tunnel, has a very delicate green metallic lustre. On going into the tunnel (about 5 ft. high) this lustre is not seen, and the Moss itself is nearly invisible. Its botanical name is Schistostega pennata.—T. Watson, in "Science Gossip."

THE LIBRARY.

THE FERN WORLD.*

This is an elegantly got-up book, beautifully printed, and illustrated with a Woodbury-type frontispiece, three full-page engravings, a few woodcuts in the text, and twelve nature-printed coloured plates of the Ferns, to the glorification of which this work is devoted. Some of these last are very pretty, others, such as plate vi. which contains no fewer than seventeen distinct figures, cannot be so characterised; they are weak, and the eye is confused by the multiplicity of forms which is simultaneously presented to it. Mr. Heath says "it would have been opposed to the object of this work to illustrate it by mere drawings of Ferns—for the best drawing is frequently but a poor imitation of nature." This of course is true enough; but on the other hand a drawing of many of the species, if executed with moderate care, would give a far better notion of the plants represented—their mode of growth, habit, &c., than can be gained from the diminutive scraps which represent the Wall Rue (Asplenium Ruta-muraria), the Rusty-back (Ceterach officinarum), and the Forked Spleenwort (Asplenium septentrionale), on the plate to which we have already referred. Such a representation is, indeed, a libel upon the species supposed to be depicted; and we do not think these small and unattractive figures are at all calculated to bear out the glowing description which Mr. Heath gives of the plants they are meant to represent. Others of the plates, however, offend less in this particular; but all strike us as rather cramped and artificial in their arrangement, and in many cases the fertile portion of the fronds is not shown. As Mr. Heath himself is responsible for the collecting and grouping, we may say without offence that they are scarcely as satisfactory as might have been expected from one who is so thoroughly an enthusiast in his subject.

The author tells us that "the object of the present volume is twofold—it seeks to inculcate a love for the study of Nature, and to do this by making the reader better acquainted with that world of beauty—the world of Ferns." But other works, not a few, have been written with precisely the same object in view, and we cannot discover that Mr. Heath's book is better than (if as good as) some earlier volumes upon Ferns, though it is certainly a far more attractive-looking volume.

With regard to the growth of Ferns on rockeries, Mr. Heath shows fairly correct taste; but we cannot say as much for his chapter on their culture in pots, which is illustrated by a curious little figure resembling a bridal bouquet on a stand with a Fern shooting up through the middle, which is really intended for a Fern-pot. The author grows quite poetical on the subject of a Fern-pot. "Art may be exhausted," he says, "in the attempt to create chaste and fanciful contrivances for holding individual Ferns in so small a space. The receptacle may be cut in the most delicate forms of crystal; it may be moulded in the most elegant styles of majolica, terra-cotta, or after the most approved designs in silver—nay, or even in gold. We cannot condemn the taste which would seek to surround the charmingly-fronded child of the woods with the most costly productions of man's art." Notwithstanding this, however, and many passages of a similar character, there is a good deal of information in the book which is certainly an improvement on the author's earlier work on the same subject. If there are still to be found those who are unprovided with a book on British Ferns—for Mr. Heath's "world" is very circumscribed in its area—and who do not mind a little extra expense in procuring an elegant volume to lie on the table, this work will just suit them. It has chapters on the growth, classification, structure, uses, distribution, and folk-lore of Ferns, and on their culture and collecting, with detailed and rather verbose descriptions of each British species, and a flowing account of "some rambles through Fernland," *i.e.*, Devonshire. We see no new feature in the book which calls for special criticism or commendation; nor can we discover that it differs materially from many of its predecessors in the same field.

James Britten.

Fossil Plants.—Under the title of "Fossil Plants and their Testimony in Reference to the Doctrine of Evolution," Mr. Carruthers has reprinted the two addresses which he delivered to the Geologists' Association in his presidential capacity at the opening meetings of the last two sessions. A lengthy and able summary of the evidence for and against, from a palæontological point of view, is carefully given, and the summing-up of the whole is strongly opposed to the views which are now so generally held by the leading scientific school. "The whole evidence supplied by fossil plants," says the author—and we know of no one more capable of pronouncing an opinion on the matter—"is opposed to the hypothesis of genetic evolution, and especially the sudden and simultaneous appearance of the most highly-organised plants at particular stages in the past history of the globe, and the entire absence among fossil plants of any forms intermediate between existing classes or families." He considers, however, that facts testify to development and progression from lower to higher types.

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* "The Fern World." By Francis George Heath. London: Sampson, Low, & Co., 1877.

Pollen.*—Most persons who have examined flowers under the microscope with any degree of minuteness are probably aware that the pollen of different species varies very greatly in the size and shape of the grains of which it is composed. The subject has of late years occupied a good deal of attention abroad, and has been taken up also in this country; and Mr. Edgeworth has brought together and epitomized the researches of previous observers, adding to these the result of his own investigations. A large number of figures are given in illustration of the subject, which amply show the great variety to be found even in so apparently trifling a detail of the economy of plant life. Although somewhat roughly executed, these figures will doubtless prove useful to workers in the same limited field of observation.

Popular British Fungi.†—This little work brings together from various sources a good deal of information with regard to our larger British fungi. The more interesting species are popularly described: the experiences of the various fungus-eaters as to the merits and demerits of the edible species are summed up: and there is a mass of information with regard to what may be termed the legendary lore connected with fungi—such matters as fairy-rings, witches' butter, Jews'-ears, and the like, being duly discussed. Although mainly devoted to British fungi, a few of the more interesting and remarkable exotic species are referred to at some length. The book does not profess to be a scientific treatise, but contains a considerable amount of information about fungi which is put together in a pleasant and readable form.

THREE NEW FERNS.

Pellæa Ornithopus var. Brachyptrum.—The original type of this beautiful and distinct Californian Fern, Pellæa Ornithopus, has been awarded a first-class certificate by the Royal Horticultural Society, which it well deserved. The variety is, however, even more interesting than the type. Its fronds are from 9 in. to 12 in. in height, erect, and of a glaucous green colour; the arrangement of the pinnules represent the claw of a bird.

Polypodium Scouleri.—This is also a Californian Fern, the fronds of which vary from 9 in. to 15 in. length; they are leathery in substance, having more the stout texture of Lomaria Boryana than of any other Fern with which I am acquainted. The creeping caudex is stout, and about 1 in. in circumference, of floury whiteness, and presents a striking contrast to the dark glossy green foliage. It is a Fern which is sure to be appreciated.

Polystichum munitum.—As a hardy evergreen Alpine Fern this bids fair to be one of the best in cultivation. It resembles a large P. Lonchitis, with fronds 9 in. (or more) wide, in noble plume-like tufts or crests, measuring 4 ft. or 5 ft., or possibly 6 ft. across. Even the half-grown fronds were unaffected by frost during the winters of 1874 and 1875.

W.

Sanders's New Dwarf Iberis (I. coronaria pumila).—The Rocket Candytuft, as is well known, grows in good soil some 12 in. to 16 in. high or more, and is therefore unfit for the smallest beds. The present variety is described as so dwarf that it can hardly fail to be useful both as an edging plant and for entirely filling small beds. It is said to grow from 4 in. to 6 in. high, and to form spreading tufts from 12 in. to 16 in. in diameter, which become covered with large, clear white flower-heads, the blossoms composing which are of good substance, and resist the changes of weather better than some other annuals. It is of easy cultivation, requiring only to be sown thinly where it should bloom, but may be transplanted while young.—W. Thompson, *Ipswich.*

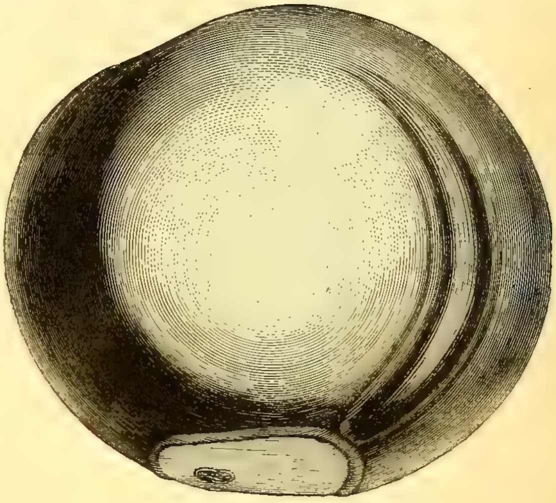
There is a man who is said to be so fond of green Peas that he goes down to Algeria every January to meet them, and he follows the growth until he winds up at Aberdeen in the autumn. A pursuit of Strawberries would be more worthy of such devotion.

TREES AND SHRUBS.

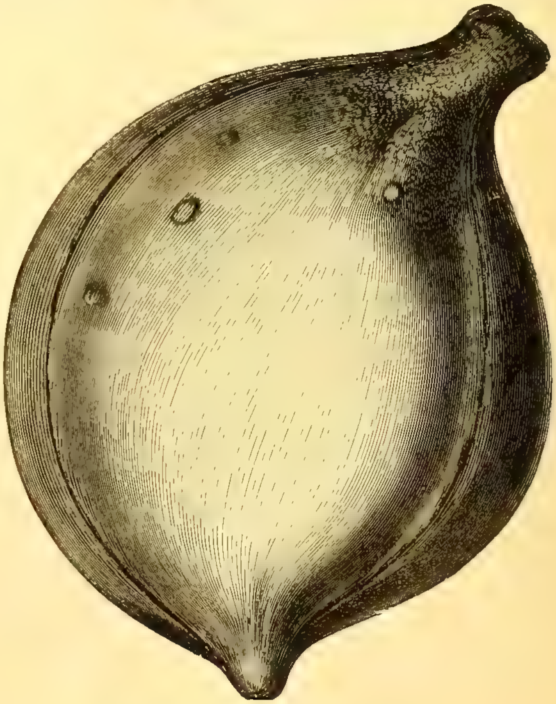
THE CALIFORNIAN BUCKEYE.

(Æsculus californica).

This dwarf, handsome-flowering tree was introduced into this country from California about twenty years ago. Its white and slightly scented spikes of blossom are produced in profusion during July, and it may sometimes also be seen in bloom as late as the early part of August; indeed, I saw a fine tree of it nearly 20 ft. high beautifully in blossom in the first week of August this year. I was informed that it was budded on a stem of Æ. sanguinea upwards fifteen years ago. It presented a striking appearance, having a well-balanced head covered with hyacinth-like spikes of flowers, more particularly so as they occurred at a season when most trees have done flowering. This tree is, I have no doubt, to be had in the trade; but it is either not known or not appreciated half so much as it



Fruit of Æsculus californica.



Unshelled fruit of Æsculus californica.

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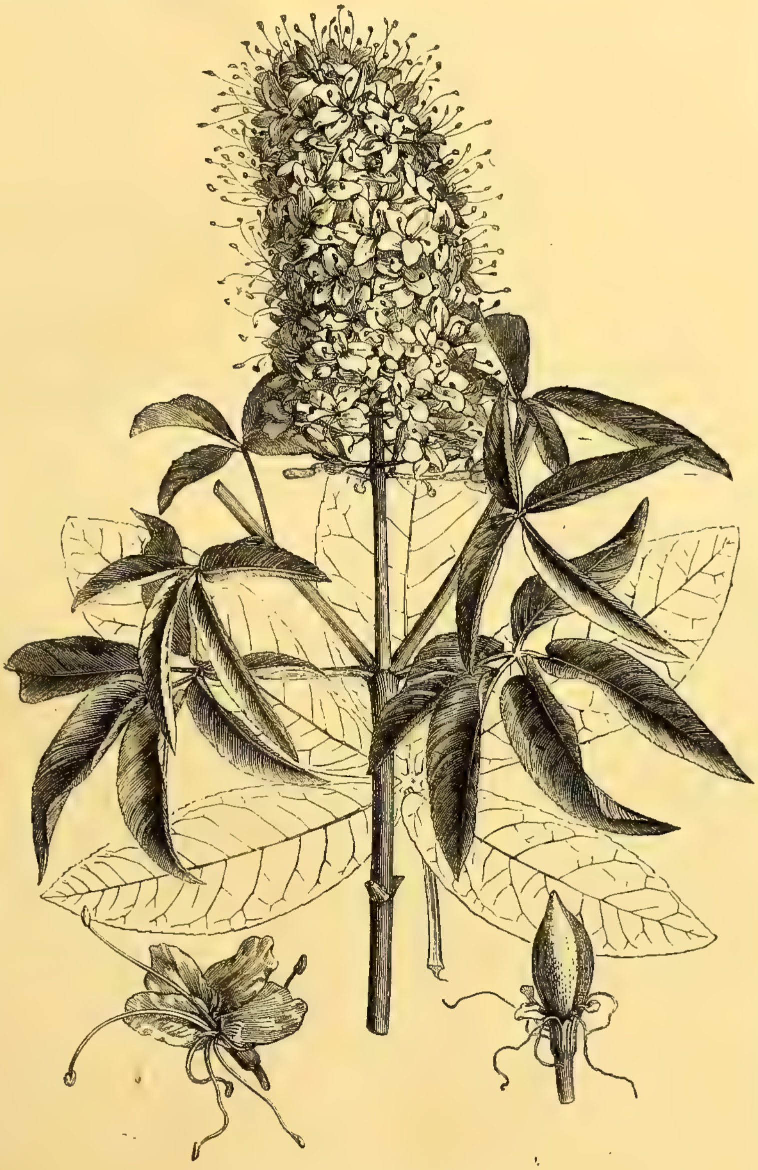
* "Pollen." By M. P. Edgeworth. London: Hardwicke & Bogue.

† "Popular British Fungi." By James Britten, F.L.S. London: "Bazaar" Office, 32, Wellington Street.

ought to be by planters. For a lawn, pleasure ground, or even a park, it is one of the most beautiful low-growing ornamental trees which we possess. It succeeds best in a rich, loamy soil, and in a dry, airy, sunny situation where its young growths can be well matured, thereby enabling them to withstand severe frosts. In damp low-lying situations it is apt to grow too late in autumn; by using a judicious selection of the different varieties of Æsculus a succession of their beautiful blooms may be kept up from early in May to the beginning of September. Æ. rubra and flava are the earliest bloomers, and Æ. macrostachya is the latest, the latter being not yet in bloom (August 20) with me. They have also highly coloured foliage in autumn, varying when it is dying off from reddish to yellowish-brown. The best and quickest method of propagating them where trees are wanted is to "work" them on the common Horse Chestnut, and they may also be reared from layers and seed, but by these processes it takes many years to get them up sufficiently to form trees—by the last-named method, however, new varieties may be obtained; and if they be intended only for forming flowering bushes, plants raised from seed or layers answer the purpose well enough, especially if they be cut close to the ground and afterwards allowed to form stools. Thus treated they will be found to grow much quicker into large bushes than if they were allowed to grow from the original seedling stem; when grown in the form of shrubs, they make beautiful flowering bushes on dressed lawns where there is room sufficient for them to fully develop themselves. Thus situated their spreading branches have a strong tendency to layer themselves, and by a little attention to pegging the outer growths down, plants covering a considerable surface may easily be obtained in a few years. If the soil in the situation selected for them be poor, it should be deeply turned up and good loam or other enriching material mixed with it before planting; a thick mulching of manure should also be spread over the surface above the roots after the operation of planting is finished. I may add that plants of it in Mr. Wheeler's nursery at Warminster look this year as if they would ripen seeds. George Berry.

Longleat.



Flower-spike of Æsculus californica.

Description.—Æsculus californica, Nutt. Leaflets four to seven, usually five, smooth, oblong-lanceolate, acute, obtuse at base, slenderly petiolulate, serrulate, 3 in. to 5 in. long: flowers in a close finely pubescent thyrse which is 6 in. to 12 in. long: calyx two-lobed, the lobes scarcely toothed: petals slightly unequal, white or pale rose, half-an-inch long or more: stamens five to seven; anthers orange-coloured; ovary densely pubescent; fruit unarmed, usually one-seeded; seed .1 in. in diameter.—Torr. & Gray, Fl. i. 251; Nutt. Sylva, ii. 69, t. 64; Newberry, Pacif. R. Rep. vi. 30, fig. 1; Hook. Bot. Mag., t. 5077. From San Luis Obispo to Mendocino Co. and Mt. Shasta, and in the foot-hills of the Sierra Nevada. It is usually a shrub 10 ft. to 15 ft. high, but sometimes in the valley, particularly between Monterey and Clear Lake; it is a widely branched tree, the base much expanded and occasionally 6 ft. in diameter, the trunk half as large and branching low, the main branches 1 ft. to 2 ft. thick, the whole forming a dense head 25 ft. to 40 ft. high and of still greater breadth. In May, when in full flower, it is a beautiful tree, but the leaves often fall before midsummer, so that for much of the year it is bare. Usually only two or three flowers in each thyrse perfect their fruit, often but one. The wood is soft and brittle.—"Botany of California."

MR. MEEHAN ON TREES IN ENGLAND.

Mr. Meehan, who has lately been in England, writes as follows to one of the Philadelphia papers:—"American trees grow much taller and have larger trunks than the English, which are all inclined to have low, spreading heads. The short, chubby stems of the English trees, however, often attain huge dimensions, and seem to attain a great age. In Buxted churchyard, in Sussex (the church one of the oldest in England), I measured a Yew tree which I have little doubt is over a thousand years old. The trunk was 23 ft. in circumference 4 ft. from the ground, it was 59 ft. high, and the horizontal diameter was 75 ft. As we regard the Yew as little more than a bush, I thought this the most wonderful tree I had ever seen. On the estate of Col. Vernon Harcourt, near this is a Beech tree, which is another wonder to me. The woody base of the trunk at the ground formed a circle of 39 ft., but it tapered up rapidly to 2 ft. from the ground, where it measured 23 ft. round, making a good straight trunk to some height, when it made numerous massive branches. I never before appreciated a majestic sight as applied to a tree till I looked up among these huge arms. The head covered a circle of ground very nearly 100 ft. in diameter. On the same estate Elm and Ash trees from 12 ft. to 17 ft. in circumference were common. American trees—planted artificially, of course—are not common in England; and this is remarkable, as the few which I saw were generally doing well. In Battersea Park I was pleased to find a few of our Silver Maples. Catalpas are occasionally seen in the parks. At the Duke of Northumberland's, at Syon, are some fine Cypress trees, knees and all. In Mr. Hibberd's grounds, in Essex, I found a surprisingly large Pin Oak (Quercus palustris); and there are, here and there, a few Pin Oaks and Red Oaks in the gardens. At Kew are some magnificent Black Walnut and Tulip trees, but the Walnuts do not perfect the nuts well. It must be indifference to new introductions that makes American trees so scarce, as they seem to do well in England generally. The Locust tree (called here Acacia) is common and does well. The American papers a few months ago gave extensive circulation to figures regarding the immense size of the first one introduced into Europe by Robin, after whom the plant was named Robinia. I measured it in the "Jardin des Plantes" a few weeks ago, in company with M. Neuman, the director, and found it be 9 ft. 2 in. round, and said to have been planted in 1601. A few days ago, with Mr. Smith, the curator, I measured the largest at Kew, and it was 12 ft. 10 in. round, or nearly 3½ ft. more than its French and more famous rival.

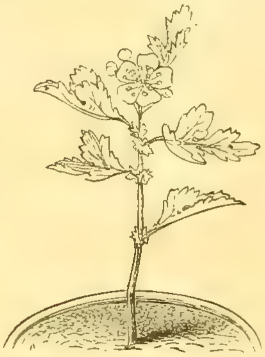
I have referred to the planting of a tree in connection with the birth of a son, and I find the gardens at Osborne House, Isle of Wight, are full of memorial trees. The visit of the Emperor Napoleon in 1857 was commemorated by planting a beautiful example of Abies nobilis. It is now about 16 ft. high and is bearing beautiful cones. Its companion, Abies Pinsapo, planted by the Empress, had done better and was a very fine tree. There are some beautiful trees planted by the Crown Princess of Prussia (when she was but one year old) in 1841. One of the grandest trees on the grounds is one of our Pacific-coast trees, Abies bracteata, planted by the Princess Helena in 1855. It must be 33 ft. high now. Its branches are close to the ground, and these are 18 ft. in diameter. Poor Maximilian planted a tree here in 1871, and the one chosen is the yellow Cedar of our Pacific coast (Cupressus Nutkaensis). It is now about 18 ft. high, and has about 7 ft. spread of branches. Another very beautiful American tree—the Libocedrus decurrens of Torrey, about 25 ft. high—was planted in 1866 by the Princess Hohenzollern of Portugal. The names of the numerous planters and dates and the occasions are neatly painted on labels and placed by each tree. Those who think they may never "live to see trees grow" may take heart by the multitude of beautiful trees here, all planted by Prince Albert or the Queen. How rapidly trees may grow is also illustrated by the Oak planted by the poet Byron at Newstead Abbey. This he set in 1798. This tree I found to be 6 ft. 9 in. round. *A propos* of memorial trees I may note that the twin Beech tree, famous in the life of Byron as that on which he carved his name and that of his sister, on the last and memorable visit of the poet to his home, is still standing, but the branch on which his own was cut, has long since decayed away, the sister branch now having covered the whole stump. It must have been dead for some years, for it is only 2 ft. 6 in. round, while Augusta's branch is 5 ft. 2 in.

Mortality amongst Chestnut Trees.—The "Courrier de Bayonne" mentions that in the neighbourhood of Baïgorry numbers of magnificent Chestnut trees have been completely dried up this year without any one being able to account for the singular occurrence. The sight which these trees present wholly deprived of foliage is most dismal; and what alarms the peasants more than anything else are the ravages caused by this new kind of plague, which has been also seen on a much larger scale in the district of Espelette. Even if the visitation should only continue for a short time, the fine clumps of Chestnuts in the ravines of the Pyrenees will be entirely swept away, the produce of which is one of the principal means of existence and prosperity of the peasantry. Some attribute the cause to insect work underground.—M.

The Trees of Judæa.—Judæa, once renowned for the number and variety of trees which grew within its borders, is now poorer than any other country in this particular. Mr. W. J. Martin, in his work on the East, says:—The only trees one meets are the Olives, which, however, are by no means plentiful in Judæa, and mostly old and stunted-looking. In Samaria we saw several considerable plantations of them, but yet that country is also sadly deficient of trees. Where now is the Oak tree on which Absalom hung by his bushy locks? There is, I believe, only one remaining sufficiently large for this; and yet we read that the "Wood of Ephraim," where he was defeated, destroyed more men than did the sword. And where is the Sycamore tree upon which Zacchæus climbed? I doubt if there be one such within many miles; and yet we know that Jericho was once richly clothed with trees and verdure, and called the "City of Palms." Indeed, that Palestine generally was once extremely fertile, and rich in woods and verdure, is evident from the meaning of many of the Scripture proper names. . . . . There is along almost every little water-course a number of what are called trees, but they are generally Willows of mere copse or brushwood. A tree of any description, of size sufficient to make an ordinary beam for building purposes, is quite a rarity—such are only to be found miles apart. The Vine, so much alluded to in the Bible, is somewhat rarely to be seen; but that it was extensively grown is evident by the traces of terraces upon the steepest hills still abundantly visible. Then as to the flowers—"The Rose of Sharon" and the "Lily of the Valley" cannot be found. There are many wild flowers certainly, but generally they grow out of a "dry ground," and have, with very good blossom, almost no green foliage. "Thorns and Briars" are abundant, but with very little foliage also, and seem useful only for burning. The Fig trees are even few and far between, and the Orange, Apricot, and Almond still more so. The fields are not enclosed, except in some rare cases, where a wise husbandman has gathered the loose stones into piles around his border. Hedges are rare, but when seen they are generally formed of large Cacti covered with dust, having in the twilight a somewhat weird look.

INFANT HAWTHORN IN FLOWER.

The annexed is a full-sized representation of a Hawthorn in flower. It was found in a bed of seedlings in our nurseries here. I have never seen anything of the sort before, and think it may be interesting to your readers. William Stewart, Jun.



Dundee.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Gravity of Woods.—Those heavier than water are Dutch Box, Indian Cedar, Ebony, Lignum Vitæ, Mahogany Heart of Oak, Pomegranate, Vine; the lightest are Cork and Poplar. Lignum Vitæ is one-third heavier, Pomegranate rather more. On the other hand, Cork, having a specific gravity of ·24 and Poplar, ·383, are the lightest woody products.

Laurus Sassafras.—I recently met with a very large Laurus Sassafras. It is growing on a farm rented by Mr. J. Gaul, on Cox's Lane, near the Island Road, in the lower part of Philadelphia. The circumference of the trunk at 3 ft. from the ground is over 12 ft. The tree itself is about 50 ft. or 60 ft. in height. The first branches are about 12 ft. from the ground, and where they leave the trunk are curiously flattened, being about 9 in. thick to 2 ft. wide.

Spiræa cæspitosa is a low-growing shrub found in the south-eastern part of Nevada on limestone rocks, in Southern Utah and Northern Arizona on sandstone, and about Mount Nebo, in the northern part of Utah, on limestone ledges. It is perfectly hardy, evergreen, growing to the height of 2 in., hugging the face of the rock. It throws up flower-stems 4 in. to 5 in. high, with very small white flowers. This shrub often covers 7 square ft. from a single root.

Rhododendron californicum.—Among the many plants of California, there are none more deserving of cultivation than Rhododendron californicum. It is a shrub, growing from 3 ft. to 8 ft. high, according to situation; in general outline it resembles the well-known Eastern Rhododendron, catawbiense. The leaves are about, when full grown, 5 in. long, in shape broadly lanceolate or oblong; in colour they are a bright shiny green. The flowers, like those of all Rhododendrons, are very handsome. They are borne in umbels. The florets (or separate flowers) are about 2 in. in diameter. The flowers are broadly campanulate in shape, the lobes or divisions being undulate; in colour they are of a rosy-purple to a clear, almost violet, purple; they vary with age; the upper lobes are yellowish or cream colour, spotted within. The stamens are shorter than the corolla, the filament being incurved.

Chilianthus californicus.—I found a single plant of this growing on a ledge of limestone in the Beaver Dam Mountains, S.E. Nevada, two years ago. It was then in full leaf. In September following I found the same bush in flower, and sent you blooms of it. I have since found it growing amongst the rocks on the Saven River, about forty miles from its source. Its finely cut foliage and hardiness will make it a desirable shrub, if not already introduced. As it seeds abundantly, it will be easily disseminated. At the same time that I found the above shrub in flower (September, 1875), I found in a stream lead-north from the Rio Virgin, Chilopsis linearis in full bloom, and it was truly very pretty.—"Gardener's Monthly."

TROPICAL ARUMS AT KEW.

Perhaps the untravelled can obtain no better idea of the deep, glossy green, the extraordinary luxuriance, and the strange and varied forms of the vegetable kingdom in tropical forests, than by visiting the Aroid house at Kew. This house, as its name implies, is principally devoted to the Arum family, of which the common Lords and Ladies or Cuckoo Pint of our hedge-banks is a familiar example. It contains the finest collection in existence. Next in importance comes the Imperial collection at Schönbrunn, near Vienna, founded by the late Dr. Schott, the learned and enthusiastic monographer of the natural Order Aroideæ. Although we find the most wonderful diversity in size, habit, &c., the structure of the inflorescence unites about 400 plants in a naturally very well-defined botanical group. In our present paper we propose to confine our remarks to some of the climbing species to be seen by any of our readers who have the means of getting to Kew. Their great size and rapid growth will always prevent them from being commonly cultivated, but where space is not so much an object, or where walls and pillars require quickly hiding by varied and graceful forms, the following species will always be a source of true pleasure to every one who knows how to appreciate the beautiful apart from a mass of glaring colour. Little trouble and skill are demanded in the successful management of all we shall name. They grow on shelves, under which run the hot-water pipes for heating the entire structure. A little sandy loam and peat are thrown among a few pieces of stone or brick, and the plant is placed in the centre of the little cone. The trunk of a small tree with the branches not lopped off too short is held upright at a distance from the woodwork by means of iron brackets, and the adventitious roots of the plants tightly embrace every part of the stem. Until recently they were allowed to climb up the woodwork at the front and ends of the house, but on the removal of the sashes some year or two ago, the tree stems were fixed as above described, and the innovation, both from an economical and æsthetic point of view, is a good one. The Mexican Monstera deliciosa, also known as Tornelia fragrans, is, apart from the beauty of its leaves, worth growing for the sake of its succulent fruits, which have somewhat the flavour of a Pine-apple. From the Kew report for 1876 we learn that the first and only plant of this Aroid received in Australia was sent from Kew; that the climate suits it admirably; that it has fruited with great success at Bowen Park; and that it is pronounced by the most competent judges to be, as its specific name implies, a really delicious fruit.

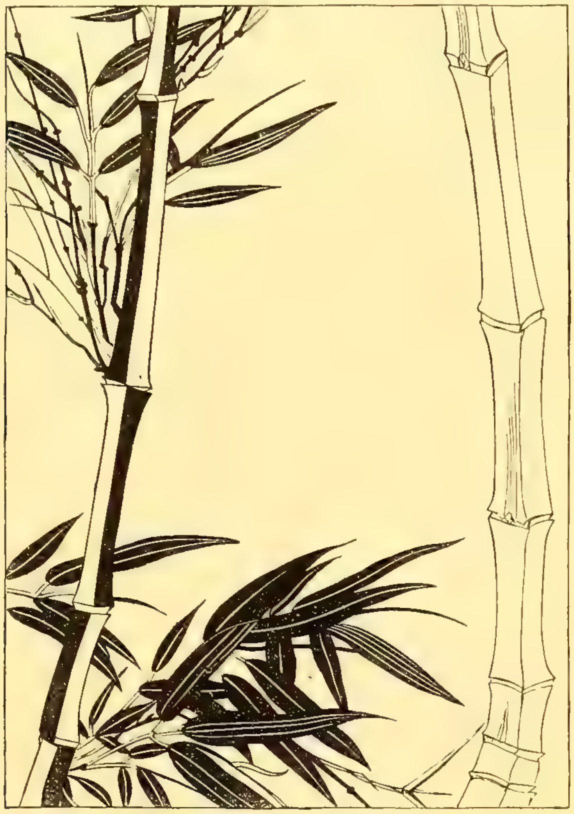
A Tropical Arum.

Rhaphidophora decursiva is climbing up one of the pillars, and its leaves, as seen from underneath, exhibit a great resemblance in texture and general appearance to those of some Cycads. Philodendron squamiferum is one of those which will well repay being kept in a small state. The leaves are curiously five-lobed, the terminal lobe being the largest, and the petioles are densely clothed with jagged and torn squamæ, deep vinous red in a young state, greenish-white when older. The peculiar leaves and petioles of this species render it a very desirable acquisition, even in select collections of stove plants. The next three possess much in common, all of them having cordate or sagittate leaves, which in P. erubescens are suffused with red on the under surface when young; the bracts, too, when first developed, are very nicely coloured. P. Imbé is larger in all its parts, and P. sagittæfolium is much larger still. Pothos scandens is from India (all those previously mentioned are from the New World), and has jointed leaves and winged petioles not much larger than, and like those of, the Orange; it is a vigorous grower and makes wonderful, long, whip-like shoots in a very short time. The leaves, thanks to the joints just spoken of, can bend themselves without trouble to any angle in order to catch any ray of light, no matter in what position the branches may be. When we consider the dense upper growth of vegetation in the jungles where the Pothos grows, the advantage of this arrangement to the plant in the struggle for existence is very obvious. The names of Philodendron tripartitum and P. lacerum will give some idea of their respective appearances; the latter has peculiar lobed leaves. Tornelia dilacerata has beautiful, pinnate, arching leaves on long foot-stalks, and is not so stiff and formal as Monstera deliciosa, which it resembles. M. dimidiata, with entire, strongly-nerved, wavy leaves, is an extremely fast grower. This sometimes makes long, rope-like shoots more than 20 ft. in length in a single season. Philodendron crassinervium has long, narrow, strap-shaped leaves on short stalks, the median nerve being very much developed. The upper surface of the entire wavy leaves of P. Lindeni is a fine, velvety, dark olive-green, with the nerves shaded light green; the under surface is light green with maroon-coloured blotches between the veins. The petioles are thickly covered with long, green processes. This, with P. squamiferum, is extremely handsome and deserves to be more generally known. With the exception of Pothos scandens, it has smaller leaves than any of the kinds we have noted. We will conclude our list with Philodendron giganteum, the largest of all the group. The very large, light green, waved leaves are from 2 ft. to 3 ft. long by 1½ ft. to 2½ ft. broad, on stout foot-stalks 3 ft. to 4 ft. long. Nearly all the pecies mentioned, and we have intentionally selected them as

A Creeping Giant Arum (Monstera).

representing different types, send out roots from the very summit of the branches, which roots quickly reach the damp flags, and then, not before, unless injured, begin to branch. At the base of some of the pillars there is quite a large mass of roots on the naked stonework. As a final recommendation we may observe that when once these Aroids are established, it requires a considerable amount of neglect to make them look shabby. They are admirably adapted to take good care of themselves. Few plants are more easily propagated, heat and moisture being nearly all that they require.

Square-stemmed Bamboos.—The accompanying illustration represents portions of two square-stemmed Bamboos selected from an interesting work in the possession of M. Sisley, published in Miyako, Japan, in 1829, by a society of artists, and entitled a "Collection of Fine-foliaged Ornamental Plants and Trees." The drawings in this work are said to have been faithfully copied from Nature, and executed in the primitive Chinese and Japanese manner, viz , simply in black and white without any shading. One represents a 'stalk entirely without leaves; the other has some foliage and evidently is intended to show the part where, with the leaves, the rudiments of bloom are to be seen. The stem is variegated with yellow like a chess-board. There can be no doubt that the plants are real Bamboos, as they bear either sprays, or the commencement of such, at the nodes. They were introduced into France about the latter end of 1876. Their appearance and foliage are most graceful, but the most remarkable part belonging to them is their four-cornered stems.—Comte de Castillon, in "Revue Horticole." [We have seen a small plant of this curious Bamboo in cultivation, and hope it will soon be plentiful in our gardens.]



Square-stemmed Bamboos.

Deep Soil.—The soil of Nebraska, according to President Furnas, is of a remarkable character, three-fourths of the whole State resembling alluvion, varying in depth from 5 ft. to 150 ft.—rarely less than 40 ft. deep. Four-fifths of its ingredients are fine silica, and the remainder consists largely of carbonate and phosphate of lime; requiring little or no drainage, and at the same time so retentive of moisture as not to be affected by drought.

PLATE LXXXIX.

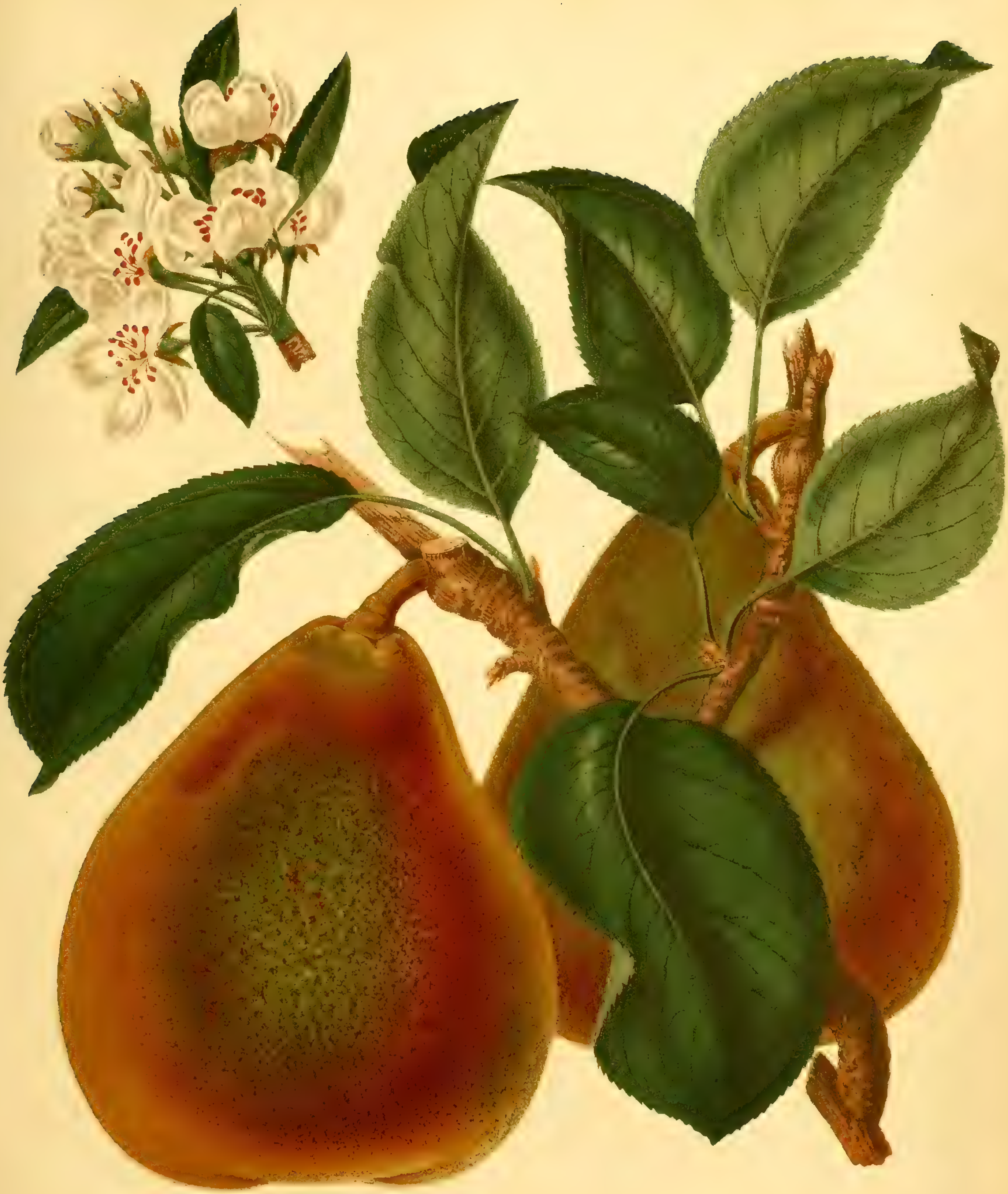
DOYENNE DU COMICE PEAR.

Drawn by H. HYDE.

Varieties of the same fruit are so much alike that only remarkable merit can justify their being represented in colour in our columns. The fruit now figured well meets this condition, for it is pronounced by good judges to be the best Pear introduced to our gardens from abroad during the past twenty years—and this after long trial. Mr. John Garland, who sent us the fruit to figure, has furnished the following particulars respecting its growth at Killerton:—"This excellent Pear, which was raised in the garden of the Comice Horticole, at Angers, well deserves the attention of fruit growers. A young pyramid tree of it, sent by the late Mr. Brock, of Guernsey, to the late Sir T. D. Acland, was planted by me in the autumn of 1858. It grew well, and soon formed a shapely specimen of good but not coarse or robust growth. It has throughout borne so freely that the growth has been partly regulated by the crops of fruit, which should always be thinned to get them satisfactory in size and flavour. I first showed this sort in November, 1864, at the Devon and Exeter Horticultural Show, where it was awarded a prize as a new variety, and for three years in succession it was awarded first prizes at the autumn meetings of the Royal Horticultural Society in the class set apart for any sort of Pear; the second year, twenty-seven dishes were set up in competition against it, and the third year twenty-one dishes—the prizes being awarded in those two years to my Doyenné du Comice. One specimen blown down by the wind in October, and sent to one of the Royal Horticultural Society's meetings, weighed 1¼ lb. I consider it to be the best November Pear in cultivation, taking all its good qualities in consideration. To prolong its season I have grafted some trees on the walls with this sort, which I allow to hang netted as late as possible. These succeed those grown on the pyramids, which also require to be put into bags, to protect them from birds—those made of newspaper being as good as any. The original tree here is grafted on the Quince stock, and is still very healthy and bears well. It is probably the parent of some thousands, as grafts of it were freely given to several of our leading nurserymen and others some years before they were distributed by ballot among Fellows of the Royal Horticultural Society. It is, I should think, one of the best market Pears in cultivation, as the late Mr. Jno. Taylor, of Messrs. Webber & Co., Covent Garden, told me they could not get enough of it. It should be grown in the most select collections."

The Sacred Basil. — Dr. George Birdwood writes in the "Academy":—"The most sacred plant in the whole indigenous materia medica of India is the Tulsi or Holy Basil (Ocymum sanctum), sacred to Krishna, and called after the nymph Tulasi, beloved of Krishna, and turned by him into this graceful and most fragrant plant. She is indeed the Hindu Daphne. The plant is also sacred to Vishnu, whose followers wear necklaces and carry rosaries (used for counting the number of recitations of their deity's name), made of its stalks and roots. For its double sanctity it is reared in every Hindu house, where it is daily watered and worshipped by all the members of the household. No doubt also it was on account of its virtues in disinfecting and vivifying malarious air that it first became inseparable from Hindu houses in India as the protecting spirit or Lar of the family. In the Deccan villages the fair Brahminee mother may be seen early every morning, after having first ground the corn for the day's bread and performed her simple toilet, walking with glad steps and waving hands round and round the pot of Holy Basil, planted on the four-horned altar built up before each house, invoking the blessings of heaven on her husband and his children—praying, that is, for less carbonic acid and ever more and more oxygen. The scene always carries one back in mind to the life of ancient Greece, which so often is found still to live in India.

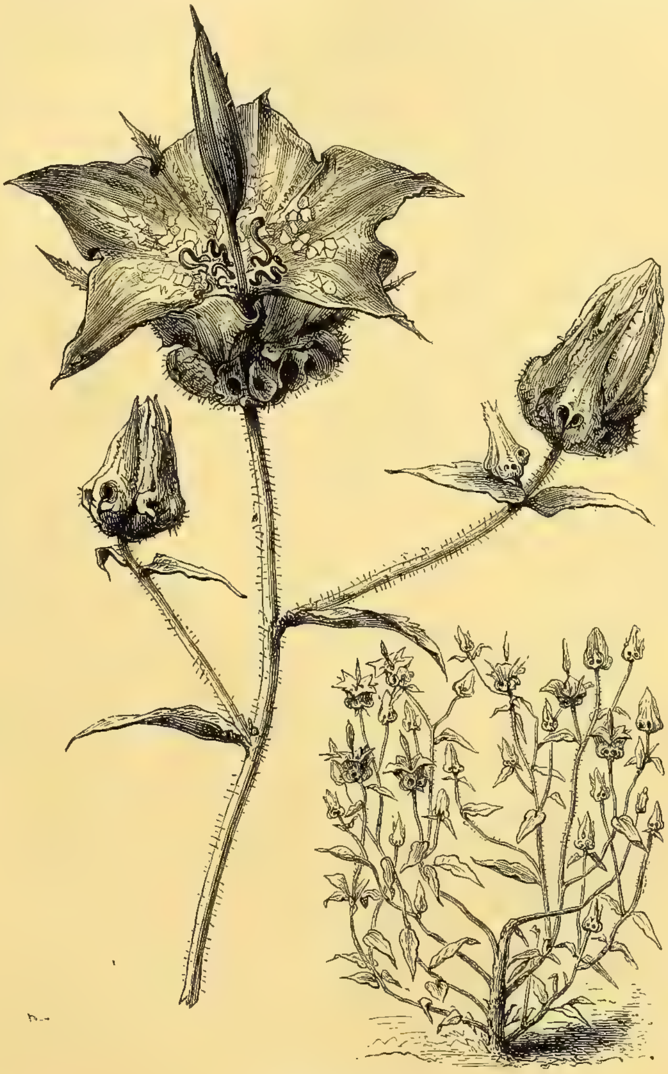
Lilium Wallacei.—This is a new Japanese Lily, and one of the most distinct and beautiful ever introduced. It is, in the opinion of Mr. Baker, a garden hybrid, and probably a cross between Lilium Leichtlini and L. Thunbergianum venustum, having the foliage, tall-growing habit, and beautiful spotting of the former, with the bright colour of the latter; it is very floriferous, each bulb throwing up from four to six flowering stems. Evidently an attractive variety, judging from specimens sent us by Dr. Wallace.



PEAR DOYENNE DU COMICE

LONGEVITY OF VARIETIES.

At the last meeting of the Michigan Pomological Society, upon the subject of "Longevity of Varieties and Races," Professor W. J. Beal, of the Michigan Agricultural College, had something interesting to say on this subject:—To begin with, let us consider the question, what is a variety and what is a race? The seeds from one plant may not all produce plants quite alike, especially if they be sown in different places and treated differently as to light, heat, moisture, richness, and texture of the soil. The seeds of these plants after a year or more of such diverse treatment will or may produce individuals so distinct from each other that some or all of them may be called distinct varieties. All varieties of plants, using the term in its accurate signification, can only be propagated by removing some part of a plant and placing it where it may continue to grow; that is, it is grafted, budded, increased by cuttings, runners, layers, offsets, tubers, &c. Examples of these are, all our Apples, Pears, Cherries, Gooseberries, Strawberries, and Potatoes. A variety can never reproduce itself by seeds, for as soon as it reproduces itself with a considerable degree of certainty it is no longer a variety but a race. Races are obtained from varieties and hybrids by constantly selecting seed from those having the peculiarities desired, and planting them apart from other varieties. In this way, after a time, varying with the variety, it will come in time to seed, as we say, and nearly or exactly reproduces itself. In this way we have obtained most of our present races of garden vegetables, as all our different Cabbages, kinds of Lettuce, Radishes, Turnips, Beets, Cucumbers, Onions (those from seeds), Squashes, Indian Corn, Oats, and Wheat. Some Peaches will nearly always come true from seed—they are ceasing to be varieties, they are becoming races. We are getting new races every year. No doubt, with time and care enough, any variety may become a race, even any of our Apples, Pears, Pelargoniums, Verbenas, and Potatoes. Among animals we have examples of races in the different kinds of cattle, as Shorthorns, Devons, Herefords, and Galloways. The Berkshires constitute a race of swine, the South Downs a race of sheep, the Light Brahmas a race of fowls. In speaking of the longevity of varieties, we must make a distinction between these and what are termed races. There may be some reasons why a variety may degenerate while a race may not degenerate. In the case of most animals, new individuals are produced by fertilized eggs. Some of the lower forms are also reproduced or multiplied by buds or offshoots, which become independent individuals. These lower animals which often bud and branch like plants, are also occasionally, at least, reproduced by fertilized eggs. Our plants are multiplied in two ways—by budding, branching, &c., and by seeds or spores. Some of our lowest water plants consist of a single microscopic cell; this cell has a way of rapidly increasing in numbers by repeated division. We see no reason why this process might not go on for ever without degeneracy, but all plants some time or other under their normal condition produce seeds or spores—fruit in some form or other. Even in cases of these minute one-celled plants of which I spoke, once a year perhaps two of them approach each other and meet. The cell walls break away or disappear in certain places; the contents of one cell are all poured into and mingle with the contents of the other. This mingled material forms two new walls about itself, escapes from the old shell, and floats away to begin a new growth the same as before. In some cases two rows of cells meet in this way, the contents of two cells being used to make a single new one. In other cases, three cells are united to form one. This blending of cells is a process answering to fertilization. It cannot, of course, go on continually without other ways of propagation, as there is a loss of 50 or $66\frac{2}{3}$ per cent. for every such spore which is produced. Why should the higher plants resort to the mode of reproduction by seeds if this mode be not necessary in some way to the well-being of the plant? Why should these lower plants blend two or three into one to fertilize and begin anew if the process be not of some advantage to the species?—"Prairie Farmer."



Campanula macrostyla.

Campanula macrostyla.—This is stated by Boissier in his "Oriental Flora" to be an annual, and to come from the shores of Lake Isauria near Mount Taurus in Asia Minor. It has flowered freely in the gardens of M. Godefroy-Lebeuf, at Argenteuil, and is really a pretty plant, even prettier than our engraving shows it to be, which scarcely does justice to the beautiful reticulations that exist in the inside of the flower. To M. Godefroy-Lebeuf we are indebted for the accompanying illustration. The plant has been freely grown in this country in various gardens of late, and will no doubt for the future find a place in our lists of good annuals.

Asteriscus mauritanicus.—This is a dwarf, half-hardy, perennial Composite, allied to Buphthalmum, and producing an abundance of deep yellow flower-heads, about $1\frac{1}{2}$ in. in diameter, throughout the summer. It forms a dense tuft not exceeding 1 ft. in height, the foliage being obovate-spathulate, entire and somewhat fleshy, and of a glossy green. The flower-heads terminate all the shoots, and are about $1\frac{1}{2}$ in. across, each head lasting some time in perfection. It is closely allied to the A. maritimus, and may possibly be only a form of that plant, but it is horticulturally distinct, the foliage being of a more lively green and almost free from pubescence, and the flowers are of a deeper yellow. It is of easy cultivation in any soil, but should have a sunny exposure, and will flower most profusely when a year old. As its name implies, it is a native of Northern Africa.—W. Thompson, *Ipswich.*

Mauve Beauty Stock.—I have a bed of this Stock now in bloom in front of my door. It belongs to the Wallflower-leaved section, and has the early blooming character of the Ten-week, with the perpetual habit of the East Lothian. It comes wonderfully true, both as regards colour and habit of growth, and produces a large proportion of double flowers. This Stock will suit "M. S. H." (see p. 196), or any one else who likes sweet-scented flowers of a soft, pleasing colour, and lasting character. The seeds should be sown about the end of February or early in March in gentle heat, and the young plants should be pricked off into pans or boxes, or potted singly into small pots, but they must not be allowed to become starved or pot-bound before being planted out. If well hardened off they may be planted out in April.—E. Hobday.

Kew Gardens.—Warm enthusiasm and concord characterised the proceedings at the public meeting held the other night at Kew, to consider the advisability of opening the Botanic Gardens at an earlier hour than at present, and also of removing what was justly termed the "unsightly" wall—a wall as melancholy as that which surrounds Clerkenwell prison—that now hides the grounds from the Richmond Road. This is not surprising; indeed it would be marvellous if any men besides those who are responsible for the blunder could be found to approve of such a selfish policy as to shut up from those who pay for it that which is bright and beautiful within a hideous, patched-up wall, and to keep the public outside except for a few hours each day. It is not to be expected that the public will consent to a serious and galling partial exclusion from an establishment of this kind, for the maintenance of which they pay more than £20,000 per annum, only to receive admittance when it pleases those whom they have put in charge to graciously open the portals of this Palace Beautiful. The public are its lawful owners; they have all along had to find the money, and it is monstrous in principle and practice to keep them outside at reasonable times, as was the case with several thousands last Bank Holiday, when they could be admitted without any injury to the gardens, or, indeed, to the scientific work of which so much spurious capital seems to be made. The resolutions adopted the other night were so clear and decisive that no one can mistake their meaning. Yet they were sufficiently moderate, for it is only asked that the gardens, and not the houses, may be opened at ten instead of one o'clock, and that a style of fence similar to that in use in the London parks and elsewhere may be substituted for the obnoxious and unnecessary wall.—"Richmond Times."

SCENT-YIELDING PLANTS.

By G. W. SEPTIMUS PIESSE, Ph.D., F.C.S.

Orris-root.

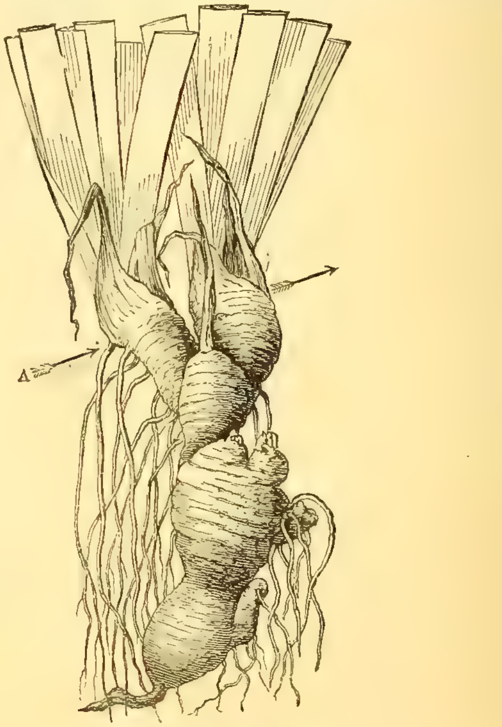
Iris florentina is the plant which yields the Orris-root, everywhere so much esteemed. Even the peasant girls in Italy and in those countries which fringe the Adriatic possess a few hanks of Orris beads. M. Grazzini, a turner near Florence, produces more than two tons of Orris beads annually; beauty they have none, but their fragrance, like that of Violets, is lasting and always fresh. The Orris-root, having been slowly and perfectly dried, is cut with circular saws into cubes which are then converted into beads. Some hundredweights of chips and shavings result from this work, to the value of which I shall presently advert. The Iris florentina or Orris plant, for commercial purposes, is mostly farmed about Pontassieve, in Tuscany. The root harvest for each plantation takes place but once in three years, so that of necessity there are plants always on the farm in three stages of growth. The harvest takes place in spring, before the Iris begins its annual growth. The roots are dug up and the flags cut back, as shown in the annexed illustration; each root is then decapitated at a point indicated by the arrow A A; the head is then replanted and grows with great vigour, making in the course of three years numerous off-shoots in the form of fresh roots. This Iris flourishes best in a soil that is somewhat marshy and stony, a kind of land not often found except at Pontassieve, where it exists in perfection; it is, in fact, a poor soil, but notwithstanding that, the plants require no manure. The Iris florentina is of larger growth than the common Blue Flag of English gardens, and the flowers far less numerous, and of a very pale blue; moreover, it does not come into blossom when first transplanted into British soil until five or six weeks later than its naturalised English ally. In spring, when the roots are dug up, they are spread out to dry and ripen in the open air; each root is then trimmed by women with a short sharp knife into the shape in which it is found in the market. It is also at the same time sorted into the various qualities under which it is sold. The dark-coloured sorts are often bleached by means of the fumes of burning sulphur, an operation, however, which is very detrimental to them, as far as perfumery purposes are concerned, but for bead manufacture they are improved by being whitened.

For scent-yielding purposes the Orris-root is used in two forms; one in powder, the other as a spirituous tincture. For producing the powder or flour of Orris, the root has to be perfectly dried; it is then crushed under millstones, and finally reduced to powder in a drug mill. The Orris powder thus produced is mixed with dry Wheat starch in the proportion of 2 lb. of Orris to 12 lb. of starch powder; after being sifted and blended they are allowed to remain together for a time, when the starch becomes fragrant, and the product is the well-known "Violet Powder" of the shops. In this way many tons weight of Orris flour are used. Almost all tooth powders contain about one-quarter of their weight of Orris-root flour. Shakespeare thus chides the Violet—

> Whence didst thou steal thy sweet that smells,
> If not from my love's breath?

When Orris flour is tied up in cushions or bags (sachets), and distributed among the clothes in a wardrobe, it gives to the linen a most delightful odour.

The tincture or essence of Orris is made by intermixing 1 gallon of rectified alcohol and 8 lb. of broken Orris-root; or better still, the chips and shavings from an Orris bead turnery. These ingredients should remain together in a glass or copper vessel for about a month. When drawn off, the tincture will be quite bright, and it is then ready for use. This extract enters largely into the composition of many of the most celebrated "bouquets," but it is never sold pure because its odour, although grateful, is not sufficiently sweet to win public favour on its own merits. It possesses little aroma itself, but it has the power of strengthening the odour of other fragrant bodies. The celebrated Ess Bouquet consists of one-third of its volume of extract of Orris, as does also the equally-famed Jockey Club Bouquet. The Iris florentina could be cultivated in several of the English colonies, more particularly the Cape of Good Hope, and that, too, with considerable profit.



Root of Iris florentina.

Hughenden House, Chiswick.

Standard as to the Size of Nursery Trees.— The recent Convention of American nurserymen at Chicago came to the following conclusions as to the size, &c., of the trees for sale by them. Apples—two years, first quality, shall be 3½ ft. to 5 ft. in height, pyramidal in shape; clean trunks for at least 18 in. from the ground, and in good healthy condition: three years, first quality, shall be 4 ft. to 6 ft. in height, 10-16ths of an inch and upwards in diameter, 2 in. from the ground, and in healthy condition. Cherries—two years old, No. 2, shall be 3½ ft. to 4½ ft. in height, ½ in. and upwards in diameter at 2 in. above the bud, and well branched: two years, No. 1, shall be from 4 ft. to 6 ft. in height, not less than ¾ in. in diameter 2 in. from the bud; well branched with clean trunks not less than 18 in. from the ground. Pears—first quality, two years, shall be from 4 ft. to 6 ft. in height, free from forks, and well branched: two years, No. 2, shall be from 4 ft. to 5 ft., well branched and free from forks. Plums shall be classed and graded as for Pears; shall be measured from the collar to the terminal bud, or main stem, and carefully dug. No claims for damage not made within ten days from receipt of stock shall be entertained.

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 180).

Violets.

(1) *Queen.* The Violets, Cowslips, and the Primroses,
Bear to my closet.
Cymbeline, act i., sc. 6.

(2) *Angelo.* It is I
That, lying by the Violet in the sun,
Do as the carrion does, not as the flower,
Corrupt with virtuous season.
Measure for Measure, act ii., sc. 2.

(3) *Oberon.* Where Oxlips and the nodding Violet grows.
Midsummer Night's Dream, act ii., sc. 2.

(4) *Salisbury.* To gild refined gold, to paint the Lily,
To throw a perfume on the Violet,
To smooth the ice, or add another hue
Unto the rainbow, or with taper-light
To seek the beauteous eye of Heaven to garnish,
Is wasteful and ridiculous excess.
King John, act iv., sc. 2.

(5) *King Henry.* I think the king is but a man as I am; the Violet smells to him as it doth to me.
Henry V., act iv., sc. 1.

(6) *Laertes.* A Violet in the youth of primy nature,
Forward not permanent, sweet not lasting.
The perfume and suppliance of a minute;
No more.
Hamlet, act i., sc. 3.

(7) *Ophelia.* I would give you some Violets, but they withered all when my father died.
Ibid., act. iv., sc. 5.

(8) *Laertes.* Lay her in the earth,
And from her fair and unpolluted flesh
May Violets spring.
Ibid., act v., sc. 1.

(9) *Belarius.* They are as gentle
As zephyrs blowing below the Violet
Not wagging his sweet head.
Cymbeline, act iv., sc. 2.

(10) *Duke.* That strain again. It had a dying fall;
O, it came o'er my ear like the sweet south
That breathes upon a bank of Violets,
Stealing and giving odour.
Twelfth Night, act i., sc. 1.

(11) *Song of Spring*—When Daisies pied and Violets blue, &c.
(See Cuckoo Buds).—*Love's Labour's Lost*, act v., sc. 2.

(12) *Perdita.* Violets dim,
But sweeter than the lids of Juno's eyes
Or Cytherea's breath.
Winter's Tale, act iv., sc. 4.

(13) *Duchess.* Welcome, my son—Who are the Violets now
That strew the green lap of the new-come spring ?
Richard II., act v., sc. 2.

(14) *Marina.* The yellows, blues,
The purple Violets and Marygolds
Shall as a chaplet hang upon thy grave
While summer days do last.
Pericles, act iv., sc. 1.

(15) These blue-veined Violets whereon we lean
Never can blab, nor know not what we mean.
Venus and Adonis.

(16) Who when he lived, his breath and beauty set
Gloss on the Rose, smell to the Violet.
Ibid.

(17) When I behold the Violet past prime,
And sable curls all silvered o'er with white,

. . . .

Then of thy beauty do I question make
That thou among the wastes of time must go,
Since sweets and beauties do themselves forsake
And die as fast as they see others grow.
Sonnets, 12.

(18) The forward Violet thus did I chide;—
"Sweet thief, whence didst thou steal thy sweet that smells,
If not from my love's breath ? The purple pride
Which on thy soft cheek for complexion dwells,
In my love's veins thou hast too grossly dyed."
Sonnets, 99.

There are about a hundred different species of Violets, of which there are five species in England, and a few sub-species. One of these is the Viola tricolor, from which is descended the Pansy, or Love-in-Idleness (see Pansy). But in all those passages in which Shakespeare names the Violet, he alludes to the purple sweet-scented Violet, of which he was evidently very fond, for all the eighteen passages tell of some point of beauty or sweetness that attracted him, and which is said to be very abundant in the neighbourhood of Stratford-on-Avon. And so it is with all the poets from Chaucer downwards—the Violet is noticed by all, and by all with affection. I need only mention two of the greatest. Milton gave the Violet a chief place in the beauties of the "Blissful Bower" of our first parents in Paradise—

> Each beauteous flower
> Iris all hues, Roses and Jessamin
> Rear'd high their flourisht heads between, and wrought
> Mosaic; underneath the Violet,
> Crocus and Hyacinth with rich inlay
> Broidered the ground; more coloured than with stone
> Of costliest emblem.
> *Paradise Lost*, Book 4.

and Sir Walter Scott crowns it as the queen of wild flowers—

> The Violet in her greenwood bower,
> Where Birchen boughs with Hazels mingle,
> May boast itself the fairest flower
> In glen, in copse, or forest dingle.

Yet favourite though it ever has been, it has no English name. Violet is the diminutive form of the Latin Viola, which again is the Latin form of the Greek *ἴον*. In the old vocabularies Viola frequently occurs, and with the following various translations:—"Ban-wyrt," *i.e.*, Bone-wort (eleventh century vocabulary); "Clœfre," *i.e.*, Clover (eleventh century vocabulary); "Violé, Appel-leaf" (thirteenth century vocabulary); "Wyolet" (fourteenth century vocabulary); "Vyolytte" (fifteenth century nominale); "Violetta" A^{ce}, a Violet (fifteenth century pictorial vocabulary); and "Cleape, Ban-vyrt" (Durham Glossary). It is also mentioned in the Anglo-Saxon translation of the Herbarium of Apuleius in the tenth century as "the Herb Viola purpurea; (1) for new wounds and eke for old; (2) for hardness of the maw" (Cockayne's translation). In this last example it is most probable that our sweet-scented Violet is the plant meant, but in some of the other cases it is quite certain that some other plant is meant, and perhaps in all. For Violet was a name given very loosely to many plants, so that Laurembergius says:—"Vox Violæ distinctissimis floribus communis est. Videntur mihi antiqui suaveolentes quosque flores generatim Violas appellasse, cujuscunque etiam forent generis quasi vi oleant" (Apparat. Plant., 1632). This confusion seems to have arisen in a very simple way. Theophrastus described the Leucojum, which was either the Snowdrop or the spring Snowflake, as the earliest-flowering plant; Pliny translated Leucojum literally into Viola alba. All the earlier writers on natural history were in the habit of taking Pliny for their guide, and so they translated his Viola by any early-flowering plant that most took their fancy. Even as late as 1693 Samuel Gilbert, in "The Florist's Vade Mecum," under the head of Violets, only describes "the lesser early bulbous Violet, a common flower yet not to be wasted, because when none other appears that does, though in the snow, whence called Snowflower or Snowdrop;" and I think that even later instances may be found.

When I say that there is no genuine English name for the Violet, I ought perhaps to mention that one name has been attributed to it, but I do not think that it is more than a clever guess. "The commentators on Shakespeare have been much puzzled by the epithet 'happy lowlie down,' applied to the man of humble station in Henry IV., and have proposed to read 'lowly clown,' or to divide the phrase into 'low lie down,' but the following lines from Browne clearly prove 'lowly down' to be the correct term, for he uses it in precisely the same sense—

> 'The humble Violet that lowly down
> Salutes the gay nymphs as they trimly pass.'"
> *Poet's Pleasaunce.*

This may prove that Browne called the Violet a Lowly-down, but it certainly does not prove that name to have been used by others for the Violet. It was, however, the character of lowliness and sweetness combined that gave the charm to the Violet in the eyes of the emblem writers: it was for them the readiest symbol of the meekness of humility. "Humilitas dat gratiam" is the motto that Camerarius places over a clump of Violets. "A true widow is, in the church, as a little March Violet shedding around an exquisite perfume by the fragrance of her devotion, and always hidden under the ample leaves of her lowliness, and by her subdued colouring showing the spirit of her mortification, she seeks untrodden and solitary places," &c. (S. Francis de Sales). And the poets could nowhere find a fitter similitude for a modest maiden than

A Violet by a mossy stone
Half hidden by the eye.

Violets, like Primroses, must always have had their joyful associations as coming to tell that the winter is passing away and brighter days are near, for they are among

The first to rise
And smile beneath spring's wakening skies,
The courier of a band
Of coming flowers.

Yet it is curious to note how like Primroses also they have been ever associated with death, especially with the death of the young. I suppose these ideas must have arisen from a sort of pity for flowers that were only allowed to see the opening year and were cut off before the full beauty of summer had come; and so they were looked on as apt emblems of those who enjoyed the bright springtide of life and no more. But however it arose, the feeling was constantly expressed. Shakespeare expresses it in the collection of "purple Violets and Marygolds" which Marina carries to hang "as a chaplet on the grave" (No. 14), and again in Laertes' wish that Violets may spring from the grave of Ophelia (No. 8), on which Steevens very aptly quotes from Persius' Satires—

e tumulo fortunataque favillà
Nascentur Violæ.

In the same spirit Milton gathering for the grave of Lycidas—

Every flower that sad embroidery wears,

gathers among others "the glowing Violet;" and the same thought is repeated by many other writers.

There is a remarkable botanical curiosity in the structure of the Violet which is worth notice: it produces flowers both in spring and autumn; but the flowers are very different. In spring they are fully formed and sweet-scented, but they are mostly barren and produce no seed, while in autumn they are very small, they have no petals and (I believe) no scent, but they produce abundance of seed.

I need say nothing to recommend the Violet in all its varieties as a garden plant. As a useful medicinal plant it was formerly in high repute—

Vyolet an erbe cowth
Is knowyn in ilke manys mowthe,
As bokys seyn in here langage,
It is good to don in potage,
In playstrys to wondrys it is comfortyf,
W^{h} oyer erbys sanatyf.

Stockholm MS.

And it still holds a place in the Pharmacopæia, while the chemist finds the pretty flowers one of the most delicate tests for detecting the presence of acids and alkalies; but as to the many other virtues of the Violet I cannot do better than quote Gerarde's pleasant and quaint words:—"The Blacke or Purple Violets, or March Violets of the garden, have a great prerogative above others, not onely because the minde conceiveth a certaine pleasure and recreation by smelling and handling of those most odoriferous floures, but also for that very many by these Violets receive ornament and comely grace; for there be made of them garlands for the head, nosegaies, and poesies, which are delightfull to looke on and pleasant to smell to, speaking nothing of their appropriate vertues; yea gardens themselves receive by these the greatest ornament of all chiefest beautie and most gallant grace, and the recreation of the minde which is taken thereby cannot but be very good and honest; for they admonish and stir up a man to that which is comely and honest, for floures through their beautie, variety of colour, and exquisite forme, do bring to a liberall and greatte manly minde the remembrance of honestie, comelinesse, and all kindes of vertues. For it would be an unseemely and filthy thing (as a certain wise man saith) for him that doth looke upon and handle faire and beautifull things, and who frequenteth and is conversant in faire and beautifull places, to have his minde not faire but filthie and deformed." With these brave words of the old gardener I might well close my account of this favourite flower, but I must add George Herbert's lines penned in the same spirit:—

Farewell, dear flowers, sweetly your time ye spent,
Fit, while ye lived, for smell or ornament,
And after death for cures;
I follow straight without complaint or grief,
Since if my scent be good, I care not if
It be as short as yours.

Poems on Life.

Walnut.

(1) *Petruchio.* Why, 'tis a cockle or a Walnut-shell,
A knack, a toy, a trick, a baby's cap.
Taming of the Shrew, act iv., sc. 3.

(2) *Ford.* Let them say of me, as jealous as Ford, who searched a Walnut-shell for his wife's leman.
Merry Wives of Windsor, act iv., sc. 2.

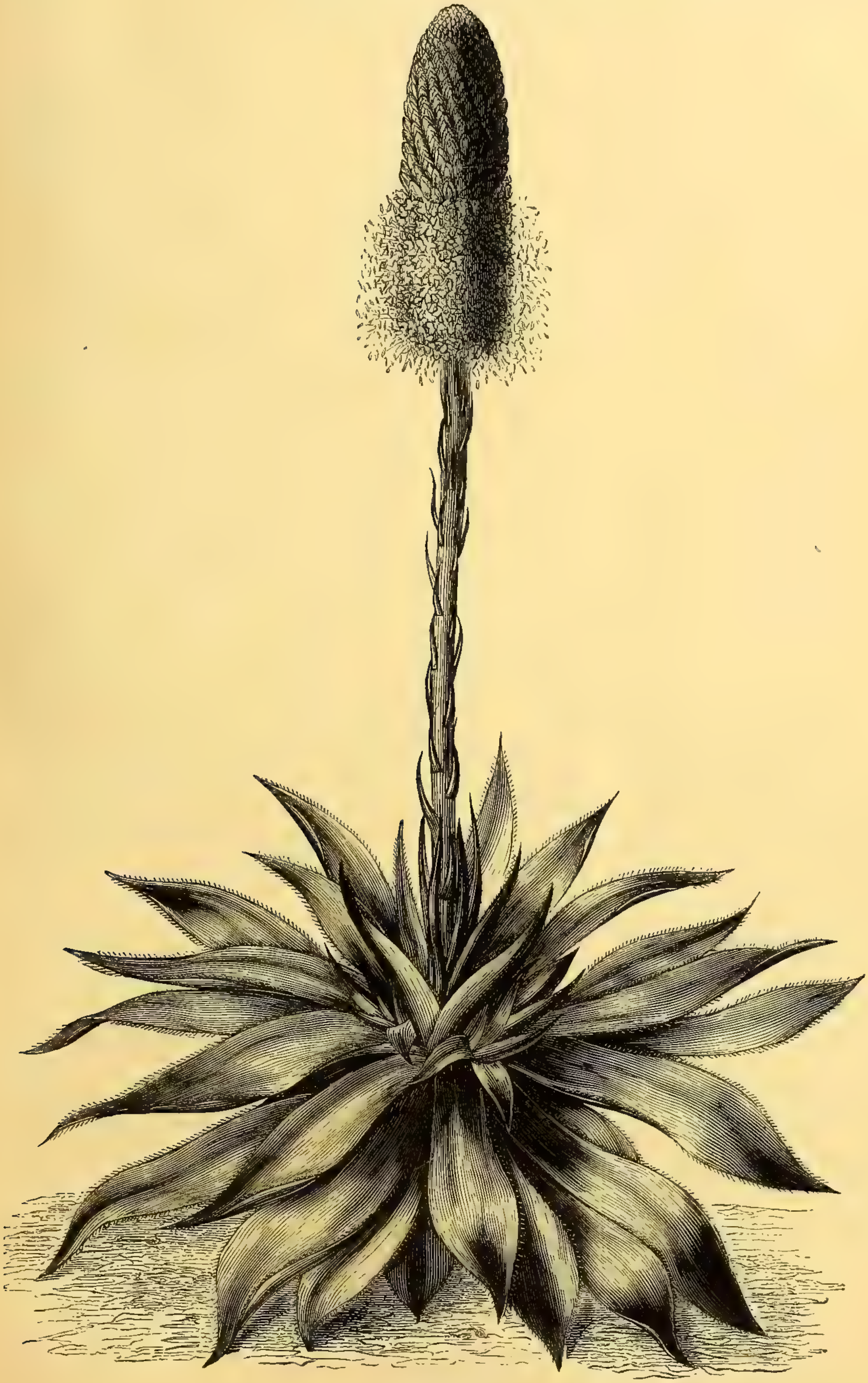
The Walnut is a native of Persia and China, and its foreign origin is told in all its names. The Greeks called it Persicon, *i.e.*, the Persian tree, and Basilikon, *i.e.*, the Royal tree; the Latins gave it a still higher rank, naming it Juglans, *i.e.*, Jove's Nut. "Hæc glans, optima et maxima, ab Jove et glande juglans appellata est" (Varro). The English names tell the same story. It was first simply called Nut, as the Nut *par excellence.* "*Juglantis vel nux*, knutu" (Ælfric's Vocabulary). But in the fourteenth century it had obtained the name of "Ban-nut," from its hardness. So it is named in a metrical vocabulary of the fourteenth century—

Pomus	Pirus	Corulus nux	Avelanaque	Ficus.
Appul-tre	Peere-tre	Hasyl Note	Bannenote-tre	Fygge.

and this name it still holds in the west of England. But at the same time it had also acquired the name of Walnut. "*Hec avelana*, A^{c3} Walnot-tree" (Vocabulary fourteenth century). "*Hec avelana*, a Walnutte and the Nutte" (Nominale fifteenth century). This name is commonly supposed to have reference to the hard shell, but it only means that the nut is of foreign origin. "Wal" is another form of Walshe or Welch, and so Lyte says that the tree is called "in English the Walnut and Walshe Nut tree." "The word Welsh (wilisc, woelisc) meant simply a foreigner, one who was not of Teutonic race, and was (by the Saxons) applied especially to nations using the Latin language. In the middle ages the French language, and in fact all those derived from Latin, and called on that account *linguæ romanæ*, were called in German *Welsch.* France was called by the mediæval German writers *daz Welsche lant*, and when they wished to express 'in the whole world,' they said, *in allea welschen und in tintschen richen*, in all Welsh and Teutonic kingdoms. In modern German the name *Wälsch* is used more especially for Italian" (Wright's "Celt, Roman, and Saxon"). This will at once explain that Walnut simply means the foreign or non-English Nut.

It must have been a well-established and common tree in Shakespeare's time, for all the writers of his day speak of it as a high and large tree, and I should think it very likely that Walnut trees were even more extensively planted in his day than in our own. There are many noble specimens to be seen in different parts of England, especially in the chalk districts, for "it delights," says Evelyn, "in a dry, sound, rich land, especially if it incline to a feeding chalk or marl; and where it may be protected from the cold (though it affects cold rather than extreme heat), as in great pits, valleys, and highway sides; also in stony ground, if loamy, and on hills, especially chalky; likewise in cornfields." The grand specimens that may be seen in the sheltered villages lying under the chalk downs of Wiltshire and Berkshire bear witness to the truth of Evelyn's remarks. But the finest English specimens can bear no comparison with the size of the Walnut trees in warmer countries, and especially where they are indigenous. There they "sometimes attain prodigious size and great age. An Italian architect mentions having seen at St. Nicholas, in Lorraine, a single plank of the wood of the Walnut, 25 ft. wide, upon which the Emperor Frederick III. had given a sumptuous banquet. In the Baidar Valley, near Balaclava in the Crimea, stands a Walnut tree at least 1000 years old. It yields annually from 80,000 to 100,000 Nuts, and belongs to five Tartar families, who share its produce equally" (Gardeners' Chronicle.")

The economic uses of the Walnut are now chiefly confined to the timber, which is highly prized both for furniture and gun-stocks, and to the production of oil, which is not much used in Europe, but is highly valued in the East. "It dries much more slowly than any other distilled oil, and hence its great value, as it allows the artist as much time as he requires in order to blend his colours and finish his work. In conjunction with amber varnish it forms a vehicle which leaves nothing to be desired, and which doubtless was the vehicle of Vandyck, and in many instances of the Venetian masters, and of Correggio" ("Arts of the Middle Ages"—Preface). In mediæval times a high medicinal value was attached to the fruit, for the celebrated antidote against poison, which was so firmly believed in, and which was attributed to Mithridates, King of Pontus, was chiefly composed of Walnuts. "Take two dry Walnut kernels, as many Figs, of Rue twenty leaves, stamp all these together into one mass with a grain or corn of salt. Whosoever accustoms himself to eat of this confection in a morning next his heart, there shall no poison hurt him that day" (Phillips).



Agave Celsiana.

Walnuts are still very popular, but not as poison antidotes; their popularity now rests on their use as pickles, their excellence as autumn and winter dessert fruits, and with pseudo-gypsies for the rich olive hue that the juice will give to the skin. These uses, together with the beauty in the landscape that is given by an old Walnut tree, will always secure for it a place among English trees; yet there can be little doubt that the Walnut is a bad neighbour to other crops, and for that reason its numbers in England have been much diminished. Phillips said there was a decided antipathy between Apples and Walnuts, and spoke of the Apple tree as—

> Uneasy, seated by funereal Yew
> Or Walnut (whose malignant touch impairs
> All generous fruits), or near the bitter dews
> Of Cherries.

And in this he was probably right, though the mischief caused to the Apple trees more probably arises from the dense shade thrown by the Walnut tree than by any malarious exhalation emitted from it.

Warden (see Pears).

H. N. Ellacombe.

(To be continued).

Agave Celsiana.—This Aloe, named in honour of the late M. Cels, of Paris, a large grower of succulent plants, is well suited for purposes of decoration, on account of the distinct glaucous green colour of its foliage, which is about the same shade as that of Echeveria glauca. It is of a moderately strong habit, and when fully grown is from $1\frac{1}{2}$ ft. to 2 ft. in height, and $2\frac{1}{2}$ ft. in diameter. It generally flowers when about the age of seven or eight years, and belonging, as it does, to the Spicate group, it makes new heads again after flowering, which may be taken off and struck, which they readily do if set on soil and kept dry for a time. The marginal teeth are soft, and the apex, unlike that of most Agaves, is also soft, as is, indeed, the whole plant. When raised from seed the young plants vary a little, some being more and some less glaucous than the parent, and these seedlings have been introduced into collections under the names of A. Ousselgheimiana, concinna, and glauca.—J. Croucher.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

September 3.—Sowing Mignonette in pots; also a large plot with Spinach for winter use. Putting in cuttings of Heliotropes to furnish blooms in winter. Potting batches of Pelargoniums and late-struck Fuchsias. Clearing off Onions, and placing them in fruit-cleared Vineries to dry ready for roping. Renovating the linings round Cucumber and Melon frames. Gathering Williams' Bon Chrétien Pears, and putting stakes to all fruit trees which require them, in order to prevent wind-waving.

Sept. 4.—Sowing Mustard and Cress in succession; also Red and White Turnip Radishes. Putting in cuttings of bedding Pelargoniums; also Ageratums and Lobelias. Taking up and storing away whilst perfectly dry Paterson's Victoria Potatoes. Earthing up Celery and Cardoons; also putting a little soil round Leeks. Forking over the surface of the ground between late-planted Cauliflowers, in order to admit the rain. Giving Peach and Nectarine trees on open walls a good washing with the garden engine to keep them free from red spider and other insects. Gathering Lord Suffield Apples and ripe Tomatoes. Watering carpet beds and other flower borders that are dry.

Sept. 5.—Thinning Turnips and Spinach. Planting out Coleworts from July sowings to come into use in winter. Making Mushroom beds and spawning others at a declining temperature of 85°. Forking the surface of the ground between newly-planted Cabbage and Broccoli plants. Stirring the soil between late Peas, Spinach, and Turnips. Clearing off Peas and Broad Beans, and preparing the land for other crops. Potting a batch of Carnations and Picotees; also Czar and Neapolitan Violets for early blooming. Tying Chrysanthemums and watering them with guano water. Gathering Summer Thorle, Golden and Kerry Pippin Apples and Pond's Seedling Plums. Watering Lettuce, Endive, and other salad crops in order to keep them growing and render them crisp.

Sept. 6.—Cleaning and roping Onions while the weather is wet. Picking over Potatoes and sorting out seed and bad ones. Washing shelves and pots. Cutting shreds, labels, and pegs. Cleaning out the fruit rooms ready for storing away fruit.

Sept. 7.—Sowing a batch of Osborn's Early Forcing French Beans in pots for a supply at Christmas. Putting in Ageratum and Heliotrope cuttings for winter blooming. Rolling gravel walks after rain. Removing runners and weeds from Strawberries in pots which are intended for forcing, and placing them further apart, so that they may be fully exposed to air and sun, and their crowns become more hardened. Thinning Turnips and July-sown Carrots; also late-sown Mignonette. Digging borders ready for planting with Cauliflowers and Lettuces. Shifting a portion of Cinerarias and Primulas to warmer quarters. Earthing up Celery. Gathering Coe's Golden Drop and Kirke's Plums; also Williams' Bon Chrétien Pears. Watering Pines and inside borders of late Vineries.

Sept. 8.—Planting Lettuces and Endive in borders so that they can be conveniently covered with spare frames during winter. Pruning Laurels and other shrubs which require it. Stripping leaves from Cabbage stumps, in order to get sprouts for the winter. Making a new Mushroom-bed and turning more manure for others. Gathering Louise Bonne of Jersey and Jersey Gratioli Pears. Fruit in use for dessert — Pines, Melons, Grapes, Peaches, Nectarines, Pears, Apples, and Plums.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Plant Houses.—Whatever requires to be done to plant houses, pits, and similar structures in the way of repairing the glass and painting should be immediately carried out before the plants now standing out-of-doors are brought in, as at no other time of the year can this work be accomplished with less inconvenience. It is a great mistake to allow several years to elapse without re-painting glass-houses, for not only does the woodwork perish much sooner through this cause, but in a house where the whole surface of wood and brick-work is clean and white there is much more light reflected to the plants during the dull winter months than where all is dark and dirty. Where no painting has to be done, the glass, rafters, sash-bars, shelves, and stages should be all well scrubbed before the plants are got into their winter quarters, and any repairs, alterations, or additions necessary to the heating apparatus completed. All winter-flowering plants that require artificial heat, and that may have been during the summer grown in pits by the aid of solar heat alone, such as Eranthemums, Plumbago rosea, Euphorbia jacquiniæflora, Poinsettias, Thyrsacanthus rutilans, Sericographis Ghiesbreghti, Begonias, and others, should no longer remain in structures where they cannot receive a little warmth should the weather suddenly become cold, for though it frequently happens through this month that the days are hot, yet during the nights the temperature falls very low, in which case the above-named and similar plants become chilled so far as to injure them seriously. All plants of this character should receive plenty of air during the middle of the day when the weather is bright, which will have the effect of stopping the shoots from extending, and secure the solidifying and hardening process which it is now desirable they should undergo; they should not be shaded, as full exposure to the sun will promote their flowering capabilities—for this reason where the glass has been smeared with whitening, to break the force of the sun's rays, this should be washed off. Gloxinias, Achimenes, and Tydæas that have bloomed through the summer should now be gradually induced to rest, but this should not be brought about too quickly, as is sometimes done by withholding water, through which the tops will die off at once instead of undergoing a more gradual decay. Another mistake is frequently committed at this time of the year by moving them to a cool house or pit, or allowing them to remain in one whilst their shoots and leaves are yet green. When so placed, and the soil allowed to get quite dry, it will cause the tops to die down; but this is not the natural ripening process to which they should be subjected—their shoots become weakened, and the plants cannot be wintered successfully. In place of such treatment they require to be stood where they can receive a fair amount of warmth, with a drier atmosphere, and the soil kept sufficiently dry to check all leaf growth, yet not so as to cause them to flag for any length of time. In this way the tops will die down naturally, and the roots ripen in such a manner as to ensure their vigorous development in spring. Deciduous stove plants, such as Allamandas, Bougainvilleas, and Clerodendrons (excepting such of the latter as have flowered late and have been proportionately late in making growth), should during this month be kept in a house where there is only a slight diminution in the temperature, having the atmosphere much drier, and with no more water to the roots than will prevent the leaves shrivelling; the plants, however, may be allowed to flag slightly before water is given, and it should then be applied in a smaller quantity than when the plants are in full growth; they ought to have more air during the day, and no shade. The above is the only treatment that in any way approaches the conditions under which such plants exist naturally.

Mushrooms.—Many amateurs are deterred from attempting Mushroom culture on account of their not having houses especially constructed for the purpose, and also through the crop being, under the most favourable conditions as to the structure in which they are grown, somewhat precarious; but these reasons should not have sufficient weight to prevent any one trying to grow them. It frequently happens that an outbuilding of any description that can be spared for the purpose will answer as well or better for the growth of this vegetable than houses that are built expressly for it. For amateurs to succeed in the cultivation of Mushrooms it is necessary to reflect a little upon the natural conditions of their growth. As every one connected with rural affairs is without doubt aware, Mushrooms grown in the open fields are not equally plentiful every year. In seasons when they are the most abundant it will invariably be found that it is when the earth has been warmed to a considerable extent by a long continuance of hot, dry weather before August, with a copious rainfall during that month: this produces in the heated ground something almost approaching to fermentation, as will easily be ascertained by plunging the hand during a hot season in loose earth a day or two after it has been well moistened by rain. The heat and moisture thus combined start the spawn (which in some land is always present in quantity) into action, and should the atmosphere be still and moist and cloudy weather follow, then there is an abundance of Mushrooms out-of-doors. This at once points to the conditions necessary to be observed when they are to be grown in houses. From the present time to the close of the year they may be produced with the greatest facility and certainty; they can be grown in a very small building, but the larger the internal space, within reasonable limits, the less fluctuations there will be in the temperature, especially in changeable weather—a condition of great importance to success. An empty stable, or any similar place on the ground-floor, will generally be found to answer; if there be an apartment above, all the better, and a thatched roof is much to be preferred to either slate or tile, for the variations in the weather will have less influence upon the internal temperature than if the roof be covered with slates or tiles. Manure in quantity proportionate to the space at command, or the size of the bed to be made, should at once be procured; this may consist of from a few wheelbarrows full up to an ordinary cart-load or more; let it be fresh, and such as has not been saturated by rain, or has previously fermented to any considerable extent. Shake out all the long litter, leaving nothing but the droppings and short bits of straw; throw it together in a heap, either in an open shed or in the place where the Mushrooms are to be grown; do not allow it to remain so long as to ferment violently—to avoid which turn it over two or three times at intervals of four or five days; by this time it will have discharged the superabundant moisture, and can be at once made up. The bed or beds may be made altogether on the ground-floor or can be constructed in the form of wide wooden shelves, two or three above each other, with spaces between of 3 ft. or 4 ft.; but where there is room I should recommend their being made altogether on the ground-floor. Shake the manure well together, and beat it solid with the fork as the work proceeds to the thickness of about 1 ft., making the whole smooth with the back of the spade. Insert a thermometer in the middle of the bed, and as soon as the temperature falls a few degrees under 80° put in the spawn, which should previously have been broken into pieces about the size of a small egg and thrust in just below the surface 8 in. or 10 in. apart. It will be safer not to soil the bed for a few days until the heat appears to be declining; the depth of soil used varies considerably with different cultivators, some using several inches, others being equally successful with only a couple. I have generally found, when the greater depth is laid on, that the beds are longer in coming into bearing, as it takes more time for the spawn to run. The soil (any ordinary loam) must be of a medium moisture, neither too dry, nor so wet as to be adhesive; beat it quite firm, and cover at once with dry hay. In the course of a month the Mushrooms should make their appearance—about which time examine the bed, and if it be too dry, which will be indicated by the buttons not swelling freely, give it a moderate moistening with tepid water applied through a rosed can, after which replace the hay on the surface. When the bed has been in bearing for some weeks and the growth of the crop begins to slacken, soak it moderately with tepid water, which will often have the effect of inducing a further production. Of course I am supposing that the building is not provided with any heating medium. As the autumn months advance other Mushroom beds may be made up, and the warmth given off by the manure for these will keep up the requisite temperature for the growth of the Mushrooms. Towards the close of the year, when the weather becomes cooler, a little more covering may be used to the beds; the door in all cases should be kept shut, and any windows or other apertures through which the external air can get in quite closed. Mushrooms can also be grown successfuly in an ordinary garden frame; in fact, it frequently happens that a crop will spring up spontaneously without being spawned or any other preparation after the bed has been used for Cucumbers or Melons; but when intentionally grown in a bed of this description I have frequently at this season cleared out the exhausted Cucumber and Melon plants, levelled the soil, and inserted a brick or two of spawn in the soil in the usual way; previous to which, if over dry, moistening it moderately with water, allowing a day or two to settle before putting in the spawn, covering with 6 in. of hay. If the thermometer did not indicate a bottom-heat of 75°, I applied back and front moderate linings of warm manure, and covered the glass with 3 in. or 4 in. of litter, tacking down mats to keep it from being blown away. This covering is necessary, as the weather is frequently so bright through this and the beginning of the next month that the heat from the glass, if uncovered, would be too much for the Mushrooms, without admitting air in such quantities during the day as would make the atmosphere too dry. Beds so treated, moistened with tepid water as required, and kept warm by an occasional lining, have continued bearing freely up to the end of November.

Hardy Flowers.

Abutilons.—Though not quite hardy, these can nevertheless be grown in the open air with excellent effect during a good portion of the year, and in favourable situations like Heckfield some of the varieties will even stand out all the year round. Abutilons make good summer-flowering plants, especially in the sub-tropical garden, where a bed of mixed varieties forms a fine feature. Such a bed I saw at Heckfield a few days ago. In the centre was the strong-growing Duc de Malakoff, with its large, bold flowers, and around it were the fine white Boule de Neige, Sellowianum variegatum (the finest variegated variety for outdoor work), and the charming yellow Lemoinei; the last-named a few days ago received a first-class certificate from the Royal Horticultural Society. Boule d'Or and probably Buisson d'Or are the same, only that the last-named is represented as having flowers of a brilliant golden-yellow, and if this be true, they are of a much deeper hue than those of Lemoinei. One of the most useful of Abutilons is Boule de Niege; it is in bloom all the year round, and therefore supplies an abundance of cut flowers at certain seasons. When at Heckfield Mr. Wildsmith cut out the corolla of one of the flowers and reversed the petals, when it looked like a finely-formed, recurved Convolvulus, and in this character made an excellent subject for a button-hole. There are several varieties of Abutilons, such as Le Liliput, with bright mauve flowers; Le Nain, clear mauve; Lilaceum album, white shaded with soft lilac-mauve; Mons. Louis Marignac, soft rose colour; Perle d'Or, clear canary yellow; and Simon Delaux, soft chamois colour shaded with purple. It would be an instructive lesson were examples of these in bloom to be shown at one of the meetings of the Royal Horticultural Society

Anemone japonica.—Of this hardy perennial we have three fine forms, viz., japonica, japonica alba, and japonica hybrida. The former has rosy-carmine flowers of good size, but a little ragged in the outline; the second, large and finely-formed white flowers; the latter blossoms of fine form, of a pale salmon-rose hue. They are all of robust growth, and when well established, flower with great freedom, especially the white variety; and, indeed, it would be difficult to name another plant of greater value for cutting from at this season of the year. It is surprising that these fine plants are not more generally grown than they are. When once obtained, it is not difficult to increase them, for towards the end of the summer, small suckers are thrown up from the roots, and if these be taken off and put into small pots of rich soil, they soon establish themselves, and can be planted out in spring. They would make fine conservatory objects grown in pots and fed with liquid manure at the time of flowering. As the plants grow from 3 ft. to 4 ft. in height, when well established, they should have ample space in which to grow.

Calceolarias.—Seedling plants will now require to be taken from the seed-pans and pricked out in other pans or shallow boxes. This is absolutely necessary, in order to give the plants space, and prevent them becoming drawn. The pans or boxes should be well drained with crocks, and some rough peat or fibry turf placed over the layer of crocks. The soil best suited to the plants during the winter months will be one part loam and one part leaf-mould, silver sand being liberally used. They require to be pricked off about 3 in. each way, and from the store boxes they can be eventually potted. Any cuttings of Calceolarias that may have been taken from fine varieties should be potted off as soon as rooted.

Francoa.—This is a genus of hardy herbaceous perennials, amongst which some are of great value as decorative plants for cultivation in pots in a cold greenhouse. This is how they are grown by Mr. Bruce Findlay, in the Botanical Gardens at Manchester, and most effective they are. There are two species, viz., F. appendiculata, having long racemes of purple flowers; and F. ramosa, having white flowers. Both bloom with great freedom, the latter especially, and quite small plants in pots will throw up fine heads of bloom. When grown in the open ground, a rather dry, sandy loam, and a somewhat sheltered position suit them best, and that is why they are cultivated in pots in unfavourable localities.

Physostegia imbricata.—This is one of a few members of a genus of hardy herbaceous perennials that are now only very rarely met with. P. imbricata is a tall and handsome perennial, growing 3 ft. and 4 ft. in height, and bearing numerous spikes of pale purple flowers, with a white lip, not unlike those of Heath in appearance. I met with this at a country show a few days ago, where it was a conspicuous feature in a collection of bunches of cut flowers. It should be planted in a good sandy loam. It is one of many fine old plants of great beauty that have become almost lost to gardens, but which can happily be found in a few old-fashioned borders. It is so beautiful that it sadly needs re-introduction. D.

A Valuable Orchard.—Mr. Stickney gave a description of the orchard of Mr. Whitney, of Franklin Grove, Ill. It occupies 160 acres, 100 of which are in bearing. In 1876, it bore 25,000 bushels. Mr. Whitney cultivates to hoed crops while the trees are small; afterwards the ground receives occasional ploughing, or is pastured with sheep. He gives no quarter to insects, and last year expended £200 in destroying the canker worm. The result is fine fruit, while others who neglected their orchards have had their crops ruined. His remedy for the canker worm is whale-oil soap. He dissolves 6 lb. of the soap in 40 gallons of water, using about one gallon to a tree. His sheep do no injury to the trees when a large range is given, and he has taken effectual care of the Codlin moth.

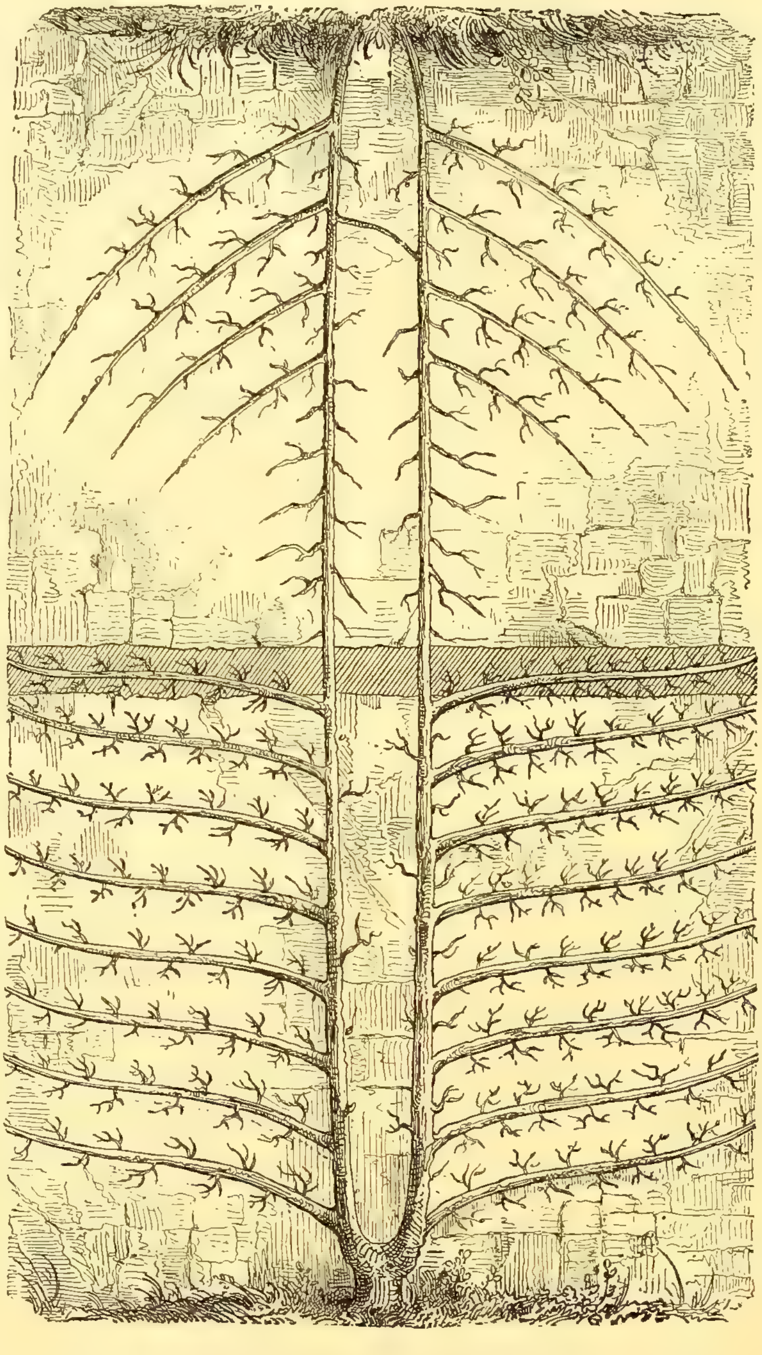
THE FRUIT GARDEN.

STRAWBERRIES IN SEPTEMBER.

Although the weather has been anything but propitious for the last three weeks, yet we have a very promising show of Strawberries for this month. They are ripening fast, and the crop on the whole is abundant, though the swelling process is irregular, a circumstance to be attributed to the rapid changes in the weather we have had; irregular swelling has, however, its advantage, inasmuch as it prolongs the season during which the fruit is fit for use. The only variety which we try in this way is Vicomtesse Héricart de Thury, a most accommodating Strawberry for any purpose. The plants now bearing a handsome crop of fruit are those from which we gathered our supply last April. Partial shelter is necessary in order to harden them a little before they are turned out-of-doors. In planting, the most favourable aspect with a high elevation should be chosen in order to insure a maximum of sunshine and light; a light dry soil is also an advantage in the case of autumn crops, as the sun's rays penetrate more freely through porous soils than stiff ones. The plants should be kept at least 2 ft. apart each way, and the fruit should be thinned out to a regular crop and propped up with Birch twigs so as to secure every advantage as regards giving flavour. They must be netted immediately the first symptoms of colouring show themselves, otherwise our ever-watchful friends, the birds, will soon deprive us of our fruit; they seem to have a particular liking for anything that is not over-plentiful. Those plants in pots that have been top-dressed and that had their drainage seen to two months ago, will soon require to be removed from behind north walls into a more genial climate preparatory to being brought forward gently later in the season. All flower-spikes may yet be removed, but it will not be safe to interfere with them after the middle of September. Autumn and winter Strawberry growing differs from spring forcing materially; spring work is done rapidly by successional batches whilst autumn crops may be prolonged by inducing the same plants to produce a succession. W. Hinds.

PEAR TREE ROOTED ON BOTH SIDES OF A WALL.

The tree of which the annexed is an illustration was planted against a western aspect wall, in sandy soil, in 1851. It is in perfect health, the branches measuring on either side 21 ft.; about five years ago the two principal stems had attained sufficient length to be turned over the top of the wall and placed in the ground, where the two branches cross one another under the surface. The eyes in the ground threw out strong roots, and those out of the ground furnished shoots which have been trained, as will be seen, obliquely, and are already close upon 16 ft. in length. When first carried over the wall the buds naturally pointed towards the ground, and it was supposed that they would ultimately turn upwards, but up to the present time such has not been the case. On the downward stems all the buds, which are few, grow with their points in the direction of the ground, a circumstance doubtless occasioned by the sap furnished by the original roots on the western side of the wall being so much more abundant than that supplied by the roots on the eastern side. It is possible that the case might be otherwise if the branches which unite the two trees were severed on the top of the wall. M.



Pear Tree rooted on both sides of a Wall.

New Melon from Khiva.—I have lately fruited a new Melon raised from seeds sent to me by Messrs. Carter & Co., and brought from Khiva by Captain Burnaby. I find it to be an oval-shaped, very early fruiting, green-fleshed variety, with a flavour something like that of the old Egyptian Green-flesh. The fruits of it when young have a hairy appearance, and are quite different from those of any other Melon with which I am acquainted. The fruit has the fault of being small, but it will be useful on account of its flavour for crossing with some of our larger sorts. Owing to the sunless summer which we have hitherto had, Melons in general have not been so good in flavour as in some years. I have, however, found Mann's new Hybrid Green-fleshed to be one of the best; Gilbert's Green-fleshed has likewise been excellent in flavour. Amongst the scarlet sorts, Sutton's new Scarlet-fleshed and Carter's Bloxholm Hall Scarlet-fleshed are all that could be desired.—William Tillery.

A NEW WAY WITH RASPBERRIES.

The little cost incurred in cultivating the Raspberry, and the remunerative price which the fruit always fetches in the market, render it one of the most profitable fruits to grow either by the amateur, cottager, or market gardener. Two things connected with the cultivation of the Strawberry deserve particular attention, viz., its aptitude for rooting near the surface, and the necessity of having it always well supplied with moisture. Where the soil is of a sandy character it is a good plan to make trenches 3 ft. wide and about 15 in. deep. In these place a good layer of rotten manure, and mix it well with the soil; on this plant the canes, spreading out the young fibres at full length, and covering them with 2 in. of soil and a good coating of rotten manure. This keeps the ground moist and encourages surface-roots, which form the chief points in securing success. If the weather should be dry at the time when the fruit begins to swell, liquid manure should be freely given, as it improves both the size and flavour of the berries. Neither hoe nor spade should ever be used on the surface, inasmuch as they bruise the roots and cause a quantity of suckers to spring up. In strong, heavy, rich soil, trenches are not required; the ground should be worked up two spades deep, mixing in with it as the work proceeds plenty of rotten manure, vegetable refuse, leaves, or anything of a similar character, and as soon as the young plants can be handled they should be thinned out to five or six suckers, according to their strength. As soon as the crop is gathered cut out all the old wood, so as to give the sun full power to mature the young canes and plump up the buds. Planting, which may be done at any time between October and the end of March, may be performed in different ways, and with about the same results. I prefer planting in rows 4 ft. apart, and 1 ft. asunder in the row, tying the canes to a couple of wires stretched along the row, on stakes. Thus managed, they have a neat appearance, and room is afforded for free admission of light and air. A less expensive plan, however, is to plant three canes together 4 ft. apart in straight lines each way, and to arch the young canes by tying them together every year; this leaves every alternate row open for gathering the fruit and cleaning the ground. In pruning, the canes should be left at different lengths—the strongest at full length, the medium ones shorter, and the next shorter still. By this system a crop is furnished from the bottom, and a succession is kept up to the middle of November. A bed of the autumn-bearing variety should be cultivated, as it is the most profuse bearer of the whole. It should be treated as follows:—The young canes should be planted 2 ft. apart not later than the end of March; about the middle of April, cut off the young canes close to the ground, and as soon as the young shoots can be handled, thin them out to 5 in. or 6 in. apart. When they have made 18 in. of growth, pinch out the points of about a third of them, a second third at 30 in., and allow the remainder to grow to their full length. By this system of pinching a regular succession may be maintained from the beginning of August to the middle or end of November, according to the season. This variety should not grow on the same ground more than two years in succession. If fine fruit is to be maintained, it is better to plant a succession every year. As this variety bears on the annual wood, it requires yearly to be cut close to the ground. As regards varieties, some of the newer sorts are very fine, but for this part of Lancashire the Red Fastolf and Yellow Beehive are most suitable, and the Double-bearing for autumn.

James Smith.

Waterdale.

FRUIT FROM BEYOND THE SEA.

The summer of 1877 promises to be a great fruit season. The trees are all hanging full. Apples will be at least in average abundance; Peaches are growing in extraordinary quantity; Grapes and Pears promise well, according to the latest reports. It is apparently a bearing year, and orchards and Vineyards will swell the gains of the farming community considerably. A large crop of fruit was once not a blessing to this country, at least not to the producers, owing to the limitations of the market, and the consequent fall of prices and unprofitableness of gathering the fruit. Prices are better sustained, and a greater proportion of the crop is gathered and sold, when the yield is an average one. It was not unusual to see £3,000,000 worth of fruit go to waste in this country in a great fruit year, because it did not pay to market it. This year, however, will differ from those which have preceded it in an interesting manner, and there is reason to believe that the whole crop of fruit may be harvested and utilized this season, no matter how large it may turn out to be, without upsetting the market and putting prices down disastrously low for producers and dealers. Invention was very much occupied last year in devising and perfecting means to utilize large crops, and the result is that this year the machinery has been created for securing a more thorough and rapid distribution of Apples, Peaches, Pears, &c., to all parts of the country, and to Europe, than ever before known. The market for fresh fruit has thus been immensely enlarged, and there is a probability that a very much larger quantity of fruit will be disposed of at remunerative prices than in any previous year. There have also been perfected some capable inventions in the way of fruit driers. Some of them of large capacity are to be set up in the Peach districts or immediately adjacent thereto, and a number of small ones will be tried in the Apple districts. Preparations for canning on an unprecedented scale are also going on, and between the drying and canning the promise is now that an uncommonly large proportion of the surplus crop will be saved and put into shape for distribution and exportation after the fruit is out of the way. Some of these appliances for transporting and drying have yet to go through their first serious trial of a busy year, and may, perhaps, still be regarded as experiments; but they have been tested on a small scale and have worked well. The one feature of the situation which is worth speaking of at length is the foreign demand for American fruit. The past season has demonstrated the fact that Europe and Australia are prepared to take pretty much all the fruit, fresh and dried (dried Peaches excepted), which the United States can land in their markets in good condition. England prefers the fresh fruit. Of Apples since last October she has taken 396,000 barrels from the United States, beginning with the latter part of October at the rate of 8,000 barrels a week, increasing in four weeks to 17,000 barrels. In December they averaged over 20,000 barrels a week, once running up to 28,525. These Apples were mostly Baldwins, Greenings, Russets, and Newtown Pippins. The English like a red Apple and one with a high flavour, and varieties answering this description found a ready sale. Sound Baldwins and Russets generally realised 14s. a barrel. Greenings fluctuated from 10s. to 16s. a barrel, according to quality. Newtown Pippins and the other remarkably good Apples ranged from 24s. to over 40s. a barrel, big shipments having been made from this port at the latter price, especially towards the close of the season. Apples are always sold in England at auction on the wharves, and prices have therefore depended to a certain extent on the amount of arrivals in port; but the market showed remarkable steadiness in the heaviest months, and shipments were always disposed of at remunerative rates. Circulars recently issued from Liverpool state that as a result of the season a preference for American Apples has been established in England, and that hereafter, whether the English crop is large or small, large supplies of well-selected fruit are likely to find there a good market. During a season of scarcity, like that of the last year, England can certainly take an average of from 12,000 to 15,000 barrels a week for the whole market year of nine months.

With reference to dried fruit, the market abroad is peculiar, but its capacity to take a vast quantity of the article has been demonstrated over and over again, and in a later and emphatic way by the experience of the season just closing. For dried Peaches there is no sale abroad at present. Possibly a demand for them may be created by the recently-invented evaporators, which dry fruit rapidly and in large quantities. If these machines succeed in bringing down the price of dried Peaches to a point low enough to tempt the working classes to buy, it will probably build up a sale. There is little hope of a foreign demand springing up unless the fruit is cheapened, for this matter of cost is all important. Our customers for dried fruit abroad are the working classes of Germany, and the miners and working men of Australia principally. The poor people of

England and Russia buy to a limited extent; and France is also a buyer, though exactly why is not clearly understood in this country, the impression being that France buys for the purpose of distillation, but no responsible authority is willing to certify to it, and little is known about it. The buyers of nine-tenths of the American dried fruit exported are the working men of Europe and Australia. As long as dried Apples can be exported from New York at 2½d. per lb., or even at 3½d., these people will buy all we can spare. If the price rise above that limit the sales fall off at once. Now Peaches cost at least 7½d. per lb. to export, and that fact alone prohibits their sale to the consumers of dried fruit abroad. Before they can be exported the price must come down 50 per cent. at least. Of dried Apples, however, there is an immense sale. Within the last eleven months over 13,800,000 lb. have been exported, and the demand has kept up longer than ever before known. Usually it ends with February 1; this year it has been steadily maintained to the present time. It is important to farmers to understand the cause of this demand, in order that they may reap the full advantages of the foreign market in the future. It is due, in the first place, to the price. At 2½d. per lb., or even 3½d., exportation goes on briskly. Dealers believe that the whole of the surplus of the crop of Apples converted into dried fruit can be marketed abroad every year at these rates. The manner in which the fruit is prepared also enters into the question. Sliced fruit will not sell abroad at all. Our customers want it cut up in pieces as large as possible, the larger the better; in halves, if possible. Sliced fruit was a failure this year, and all who traded in it lost money. Fruit raisers should understand this. Size in the cut fruit is as important an element as cheapness. Sliced fruit is perhaps better in point of fact than cut fruit, and a taste for it may yet be created, but this article is dealing only with the experience of the trade so far, and the fact is as stated. One peculiarity of the foreign sale of dried Apples is the size of the packages. Europe prefers them in barrels, the larger the better, and would rather have them in hogsheads. Australia, on the other hand, will not take packages as large as barrels; the stuff must be put up in 55-lb. and 100-lb. kegs, suitable for placing on the back of a mule for transporting up into the mountains. Venezuela requires small packages also. Canned fruit, Peaches especially, is now entering into exportation in a marked manner. The amount sent abroad within the last ten months is £140,600 worth. It is in cans that Peaches find their way to foreign countries principally at present, and the growing demand for them in this form is very encouraging. Dealers are unanimous in the opinion that Peach raisers will do better to turn their attention towards canning their surplus crops this year than in attempting to dry it. The market for the dried article is yet to be educated and built up. The market for canned fruit exists already and is a lively one.

Exportation of fruit from this country to Europe has been going on more or less for forty years, but it was never very large until 1865. That year was very prolific, and a few shipments of Baldwins, Spitzenbergs, and Greenings were made to Europe to try the market. They were fairly successful, and the business has continued in an intermittent way since. In 1873 it became a good business, and now appears to be fairly established. The figures for the last sixteen years are as follows, the years severally ending July 1.

1861	£53,800	1870	£108,400
1862	47,600	1871	101,300
1863	72,800	1872	160,800
1864	173,300	1873	340,600
1865	200,200	1874	198,000
1866	98,400	1875	326,600
1867	70,000	1876	165,400
1868	81,200	1877 (11 months)	566,200
1869	61,200		

The high figure now reached cannot be maintained unless the Apple, Peach, and Pear crops are good. But the fact that there is now a market abroad for the surplus fruit of the country, as well as for the surplus cotton, grain, and provisions, would seem to be an inducement to farmers and fruit raisers to take better care of their orchards, and not only to have no fear of a big year, but to do what they can to make the crop as large as possible.—"New York Tribune."

MYSTICAL PLANTS.

The evil reputation of the Mandrake procured it subsequently the name of Atropa Mandragora, by which our oldest botanists distinguish it; a name borrowed from the most terrible of the Fates, Atropos, and since transferred to its relative, Atropa Belladonna (Dwale, or Deadly Nightshade). So potent and valuable were the medical uses of the root at a time when few anodynes were known, that the ancient Romans made it the subject of a weird ritual, without which they would have deemed it impious to have taken it from the earth. The operator stood with his back to the wind, drew three circles around the root with the point of a sword, poured a libation on the ground, and, turning to the west, began to dig it up. Saturnine and poisonous plants were those most affected by necromancers and witches—plants dwelling in shady groves, or on wild heaths, like the potent Moonwort, which opened locks and unshoed horses; or amidst solitary churchyards and old ruins, like the deadly Nightshade and fetid Henbane, Hound's-tongue, and Digitalis, plants with dusky or sad-green leaves, and lurid-coloured flowers for the most part, and an ill-favoured soporific scent. Nature herself distinguishes Hemlock from all others of the umbelliferous tribe by the pink or purplish spots with which its tall smooth stem is variegated. It grows by hedgerows and in waste places; its large-winged, finely-cut leaves and white umbels of flowers give no indication of its dangerous nature; but its speckled cuticle betrays it, and prevents its being rashly meddled with by rustic herb-gatherers and children. Wolf's-bane or Monk's-hood, an herb of Saturn, sacred to Hecate, and which has since figured in the floral calendar of witchcraft, had its first name from the use the Anglo-Saxons made of the juice, in which they dipped their arrows and literally kept the wolf from the doors of their wattled huts. It was, and is, a brave herb for all evil purposes. Its root resembles the tail of a scorpion; its flowers, of a lurid purple, have the form of a helmet; features significantly significant for those who sought such dangerous simples. The very scent of the flowers on some sensitive persons has produced swooning and loss of sight for several days; others it has deprived of speech; and there are instances on record of persons who have eaten of the root being seized with all the symptoms of mania. Imagine such powers in the hands of a reputed witch, malevolent enough to exercise them for reward or malice, in days when medical science itself was not without faith in magic! Dreadful as are its proved effects, the Monk's-hood is a common plant in cottage gardens, where we have seen it flourishing 3 ft. in height, crowned with its handsome spikes of purplish flowers, and little children playing with them. Black Hellebore had also a place in the category of mystical plants; the Romans removed the root with the same ceremonies as were observed in taking up the Mandrake, with this distinction, that prayers were humbly offered to Apollo and Æsculapius for permission, and the operator turned to the east instead of the west on commencing to dig it up. No wayside plant is more simple in appearance than the Vervain, the "holy herb" of so many nations. Its pale lilac spike of minute flowers scarcely attracts attention, except from those who know its ancient history. In the sun-worship of the ancient Persians, their magi carried branches of Vervain in their hands when approaching the altar. So did the pagan priests of ancient Greece and Rome, and ages subsequently the Druids in the forest temples of Gaul and Britain. With the Greeks and Romans it was never absent from their religious rites. The plant was long considered to be good against witchcraft and the bite of venomous creatures; and being under the dominion of Venus, was a great beautifier. It were "perhaps well," as Lord Bacon would say, to notice the agreement between various writers as to the cephalic virtues of the plant, and remedial efficacy in taking away headache and the "pin and web," or clouds and mists which darken the optic nerve. From medical to magical uses was but a step in those days, sometimes a very short one; and accordingly we find a spray of Vervain used as a charm to keep houses and persons from harm, and especially from evil spirits and witchcraft. A relic of the latter superstition lingers in the rhyme—

> Vérvain and Dill
> Hinder witches of their will.

St. John's Wort, by virtue of its dedication to the saint whose birthday, according to the religious calendar, is the anniversary of the summer solstice, was said to have the power of putting to flight ghosts, demons, and even Satan himself. Nowadays, the Mistletoe generally affects old Crab and Apple trees and the boughs of Beech and Ash; but in so-called Druidical times it appears to have flourished in the Oak groves, which these strange worshippers are said to have made their temples, and under the name of the "All-heal plant," was, we are told, severed from these trees with solemn ceremonies. The mystery of its appearance—its aërial place of growth—the pale green antlered branches, putting forth their pearly berries in honour, as it were, of the high festival of the winter solstice, "the mother of the nights"—probably conduced to render it a miraculous plant. Long after Druidism was but a name, the plant retained its healing and protective properties for the populace, whose teachers strengthened superstitious reverence for it by calling it Lignum Sanctæ Crucis (Wood of the Holy Cross). Amulets were made of it and worn round the neck to defend the wearer from enchantment and other dangers, and in more modern times as a charm against the falling sickness and the plague. The Yew, like the Oak, was sacred to the Druids. Branches of it were anciently carried by the mourners at funeral processions, and were thrown into the grave before the coffin was lowered. The awe in which it was originally held is traceable in the traditions yet extant of its dangerous and even deadly properties. The Mountain Ash or Rowan tree has for ages been endowed with mystical properties in Scotland. The custom of carrying sprigs of it in the pocket still obtains in the Isle of Man, where it is extensively grown and cherished for warding off demons, witchcraft, and the evil eye. Not such the reputation of the Lunaria, described by Chaucer, Spenser, and Drayton, as one of the most powerful of vegetable charms, and an ingredient in the most subtle spells of night hags and enchanters; this, the homely Honesty of the cottage garden, the Satin-flower that our grandmothers cherished, is a plant than which none more apparently harmless is to be found in the floral calendars of herbmen and gardeners. But in days when plants were supposed to bear witness in many instances to their own attributes, when certain features were sought for and believed in, as affording a key to the sympathies and properties of herbs, its round, flat, silvery pods showed it to be under the dominion of the moon and endowed with magic influences.—"Chambers's Journal."

FRUIT, FLOWER, AND VEGETABLE TRIALS AT CHISWICK.

Zonal Pelargoniums, of which a large collection is planted out this season at Chiswick, were examined on this occasion by the Floral Committee. Many of the sorts have suffered severely from the recent heavy rains, but the following varieties, being in excellent condition, were deemed worthy of first-class certificates—viz., Excelsior (Denny), scarlet, with distinct white eye; Charles Smith (Pearson), dark scarlet; Mrs. Huish (Pearson), magenta scarlet; Portia (Denny), magenta scarlet; Mabel Eden (Pearson), light magenta; Lais (Denny), magenta scarlet; Mrs. Holden (Pearson), rosy pink; Mrs. Lancaster (Pearson), rosy pink; Lord Giffard (George), bright scarlet. Among the older varieties Triomphe de Stella, Golden Harry Hieover, Vesta, Rose of Summer, Claude de la Meurthe, Arthur Pearson, Princess of Wales, Mrs. Turner, Christine, Cleopatra, Lady Emily, and Snowdon were conspicuous. The collection of Pelargoniums, consisting of all the newer varieties which have this season been grown under glass, was then examined, and the following being considered very suitable for pot culture were awarded first-class certificates—viz., Miss Wakefield (Pearson), orange scarlet; Louis (Pearson), rosy purple; Lustrous (George), very bright scarlet; Lady Eva Campbell (Pearson), salmon; Mrs. Pearson (Pearson), bright orange scarlet. Among other varieties Thisbe, Charles Smith, Miss Strachan, Lizzie Brooks, Rebecca, Blanche Gordon, and Lord Zetland were especially noticeable. The double Pelargoniums, consisting of a selection of the best varieties of last season and new sorts received during the present year, were examined, and first-class certificates awarded to the following—viz., Député Anselon (Lemoine), deep magenta rose, and Le Nord Est, bright scarlet. Madame Thibaut, Noemie, C. Gligm, Auguste Villaume, Meteor Flag, Mrs. Trevor Clarke, and Madame Amilio Baltet were also very fine.

A large collection of Asters now in full bloom was next examined, and the following were highly commended as being excellent stocks—viz., Pompone (Dippe Bros.), of erect, moderately-bushy habit, producing very close, compact heads of flowers; Diamond (Haage & Schmidt), a larger and more vigorous variety of the Pompone; Dwarf Chrysanthemum-flowered (Dippe Bros.; Carter & Co.), is perhaps the best variety of any for general use, never exceeding 10 in. in height, and yielding in great profusion very large and well-formed flowers; Victoria Aster to all appearance seems to be a tall-growing variety of the Chrysanthemum-flowered; Betteridge's Exhibition Quilled is a very distinct and pleasing variety, throwing the flowers well up, and, being of a hardy constitution, does not seem to be affected by rough weather. A full report on these will appear in the Society's Journal.

Of Dianthuses, a large collection has this season been grown, and on examination the following received first-class certificates, viz., Heddewigi hybridus fl.-pl. (Benary), Heddewigi laciniatus (Benary), Heddewigi hybridus atro-purpureus (Benary), Chinensis fl.-pl. (Benary), Imperialis fl.-pl. (Benary), Heddewigi plenissimus splendens (Haage & Schmidt), and Heddewigi (Benary).

The collection of Tomatoes grown in pots under glass was examined by the Fruit Committee. It is represented by over sixty differently-named varieties, two plants of each being grown. These the Committee had arranged into classes as distinct in appearance, amounting in all to thirty-one, which number may, however, be still further reduced or increased when further examined in comparison with those growing in the open air. These Tomatoes at the present time are most interesting and well worthy of inspection. The smallest variety is represented by Red Currant, of about the same size as a Currant; the largest is The Trophy; the earliest is The Early Gem, and the latest, De Laye's, which is of little value. First-class certificates were awarded to Little Gem (Bliss), a medium-sized, round, deep red, very free-fruiting kind, and very early; to New Improved (Vick), a large, smooth ovate variety of a distinct rosy crimson colour, free-fruiting; to Vilmorin's Large Red, a very large, slightly-ribbed variety, and a wonderful cropper; to Trophy (Carter & Co., Veitch, Wheeler), an exceedingly large, nearly smooth red variety, of fine appearance, and late. Hathaway's Excelsior was found to well merit the certificate awarded to it some time ago; also Green Gage (Carter), as being by far the best yellow variety. Conqueror, One Hundred Days, and Portsmouth amongst the new varieties were greatly admired.

The collection of cordon-trained Peaches and Nectarines on the open walls was next examined. These trees, which have this season done good service, are in perfect health, and many of them are bearing heavy crops. Prominent amongst all others stands the Lord Napier Nectarine, which was awarded a first-class certificate. The fruit is very large, roundish-oblate, of a deep, dark purplish colour; the flesh is pale throughout, of rich and excellent flavour, having a dash of the Stanwick in it. It is of fine constitution, and a free bearer.

Turnips were next examined. Of these a very extensive trial has been made. The earliest varieties were found to be the American, Strap-leaf, White and Red-topped. This is an exceedingly fine Turnip, and completely takes the place of the old White Dutch, which seems to be almost worn out; at least, no true or good stocks of it have been grown at Chiswick. Following these come the Early Red Top, the Red Globe, and the Early Six-weeks or Snowball, which has numerous synonyms. This is the main-crop garden Turnip, and the finest of all. Of others—all good enough in their season, but including no novelties—were noted a very good stock of the Long Vertus, pointed-rooted, which comes in very early, and is much used in France, although not in this country; the Round Black or Chirk Castle, an excellent autumn sort; the Yellow Finland, Yellow Malta, Orange Jelly, &c. The whole of those dry-fleshed Turnips—as the Teltauer and others, so esteemed in some parts of the Continent—proved a failure, as well as many of the varieties generally grown for field culture. A later sowing of Turnips has been made, which will be examined in due course.

The collection of Savoys, it may be mentioned, is now nearly ready for inspection.

Robbing Birds' Nests.—A lecture was recently delivered in which an estimate was formed of the damage to crops by the robbery of a nest of five eggs. It was stated that during the first month each young bird eats on an average about fifty-eight flies or other insects in a day. The aggregate, multiplied by thirty for the months, makes 7,500 insects to every nest. Every insect eats daily from blossoms and leaves an amount equalling its weight until it reaches maturity.

Vegetarians in Germany.—The vegetarians of Germany have founded a pension and a colony for people of their way of thinking at Gernsbach, in Baden, where also orphan children committed to their care will be brought up on vegetarian principles. A roomy mansion known as Thalysienhof was purchased for the purpose, together with extensive fruit and vegetable gardens, and here its new occupants intend to prove by demonstration to their carnivorous neighbours how health may be attained at infinitesimal cost without animal food.

Old Pollen.—As an instance of the length of time that pollen, if secured from damp, will preserve its fertilizing properties, M. Carrière states that M. Houllet collected some pollen of Ceratozamia mexicana in the gardens of the Museum in 1867. With this he fertilized some female flowers of C. mexicana in 1872, the result this year being an abundant crop of the drupaceous fruit of this plant. Pollen, indeed, would probably keep even much longer than this.

For the Love of it.—Ward Beecher, it is said, last year raised about 15,000 bushels of Onions on his Peekskill farm. They cost him 4s. 10d. a bushel, according to estimate, and as the market price was 4s., any one can see how much he made. Mr. Beecher can send beef to the New York market at 2s. per lb., and can raise Oats at as low a mark as 8s. a bushel. His butter is reckoned at 5s. per lb., and his eggs at 5s. a dozen. He made £8,000 by lecturing last winter, and if he maintains such an income he will be able to continue farming and gardening.

AMONG THE ROSES.

In Bulgaria.

"Owing to the devastating war in Bulgaria, total ruin and annihilation have overtaken the Rose crop in the valley of Kazanlik and the neighbouring districts. . . . . . All these places are devoted to this peculiar and beautiful husbandry; the Roses are grown by the field-full."—*Our Own Correspondent.*

Fair Flora stood upon the trampled ridge
Where erst her myriad Roses wooed the eye,
Now reddened with a deeper dye—
The ghastly crimson of ensanguined feet
Which flying beat
In headlong haste across War's brazen bridge.
She stood, pale horror on her tender lips,
Her bright eyes dim and dark with pain's eclipse,
While the smoke smouldered westward on the wind
That bare Bellona's hoarse, far-echoing shout
Harsh on the ears of startled humankind.
Where'er she gazed, the wreck of hideous rout
Blotted her ancient pleasaunces. The earth,
Of old heaped high with sweet Rose-petals, now
Was piled with mangled dead. From Flora's brow
Had fled the winning smile of summer mirth,
As, lifting eyes of horror to invoke
Help out of Heaven, the sad Flower-goddess spoke :

" How serve a race that stains my loveliest gift
With fierce Bellona's blood-dye ? Here indeed
The ministries of Beauty and of Thrift
Were late united. But War's harpies heed
Nor labour's gain nor loveliness's dower.
Alas ! my well-loved flower !
Broken thy charm, thine augury belied,
Before the ruthless storm of hate and pride.
Crescent or Cross, methinks, had fitlier wreathed
Its ensign with the blooms that lately breathed
A sweeter incense than the Churches know
O'er all these ravaged homesteads night and day,
And made these fields with brighter blossoms gay
Than deck the altars where great organs blow
Praise to the God of Peace.
Your fruitless flutings cease,
Ye pipes with mouths of gold! What music now,
Save War's shrill trump and hollow drum ?
All instruments but these be dumb,
Whilst Christian hate with Moslem fury closes
In murderous conflict 'midst my trampled Roses.
And which the most accursed ? Furious man
Has made a Golgotha of Gulistan,
Till fiends among my Roses might laugh loud,
Taking my wreaths of red and white to shroud
War's hideous horrors and Hate's helpless prey.
And yet but yesterday
They made the land like Beulah with their blooms,
And not a purer, sweeter air perfumes
The Vale of Cashmere than late breathed among
These squares of fragrant husbandry, now flung
A prey to battle's never-satiate maw.
What wounds were those you saw,
Ye blue skies, and bright waters, and pure blossoms,
In men's hearts, children's limbs, and women's bosoms ?
No more ! I must away
From where Bellona shares with Belial sway !
He holds a girl's fair tress in bloody hands;
Her mailéd foot on a crushed Rose, she stands.
With that foul pair sad Flora may not cope.
But flies in far-off hope,
When this dread Carnival of Carnage closes,
Once more to dwell with Peace among the Roses.

In Britain.

I sat among the Roses. Row on row
Their blossoms clustered, in the golden glow
Of English August, round a garden nook
Whence, in the midday hush, glad eyes might look
O'er sweeping slopes of Corn-land, stretching far
To where in the bright east the azure bar
Of circling ocean gleamed against the sky,
A silent witness of security.
Couched at their Sage's feet
A troop of English maidens clustered, sweet
As their own Roses, and as gay
As the light dancing in the leaves' glad play.
With them mild age and manly youth together
Basked in the light of home and harvest weather,
Until I sighed, and said—

" Yon eastward skies
Look clear, my maidens, as your orbs of blue;
But cover that which if those orbs but knew
By startled onlook, it would something dim
Their frolic sparkling. Boys, your length of limb,
Stretched lazily, would leap at the black work
Among the Roses, yonder, where the Turk
Red-handed grapples his red-handed foe.
Well that these balmy breezes do not blow
Echoes from those far Rose plots to our own !
For Childhood's shriek and outraged Woman's groan
Would mar our Summer music. Yet, perchance,
Some thought of poor Bulgaria may enhance
Our stolid, silent British thankfulness
For long immunity from battle's stress,
For peace, and pleasant hours, and happy love
Amidst our English Roses here; may move
Unpartisan Compassion to its task
Of even-handed helping. Here we bask
In sunny safety; there the smoke of war
Sweeps o'er the bloody track of battle's car,
Whose ruthless course is over homes and hearts.
Here, as the breeze yon leafy screen disparts,
Sweet pink-flush'd petals, shaken from the bough,
Fall on the close-coiled tress that crowns your brow,
My fair-hair'd beauty, like a soft caress
From lips I need not name; but there,
Where through wrecked Rose-fields woman-slaughterers
press,
The severed blossoms fall on bosoms bare,
Leaving a stain of redness not their own.
Poor Flora, lately flown
From that so desecrated Paradise,
Looks in on us, methinks with mournful eyes,
Pleading with her more favoured children here,
Safe screened from lust's assault and battle's fear,
For pity and for help. Eternal shame
If party war-cries, in whatever name,
Deafen our ears to that appeal !
Prove we that no one-sided clamour closes
Our hearts to the large kindness which can feel
For sufferers of whatever race and creed,
That we can spare them help and pitying heed
From our blest homes of peace among the Roses."

—" Punch."

NOTES AND QUESTIONS—VARIOUS.

Keeping Mushroom Spawn.—This is the best month of the year for making Mushroom beds, and with good spawn and the proper temperature in the bed success ought to be certain. I am convinced that many beds fail through using spawn that has been badly preserved. Many, on receiving their stock of spawn, pack it away together in heaps; in that way it naturally generates damp; the white filaments or threads begin to run, and the spawn for all practical purposes is ruined. The best way to keep Mushroom spawn is to spread the cakes out thinly in a dry, warm place.—E. Hobday.

Salt not a Remedy for Mildew on Vines.—Having tried the plan (see p. 160), recommended by a French writer, for preventing mildew on Vines by sprinkling a handful or so of salt at their base, I am sorry to say that it has proved a failure. I tried the experiment on two outdoor Vines (one facing the south, the other south-east) about sixteen or twenty days ago; the disease, which was then only just appearing, has extended seriously. Can any one else, who has tried the remedy, give us the result of his work ?—C. F., *Merlwood, Parkstone.*

Dahlias Unlifted.—It is not a common practice to allow Dahlias to remain in the ground all the winter, but where land is well drained it answers well. The plants grow much stronger, and the flowers are larger, and the great strength of the stems is in their favour when exposed to wind. When the plants begin to shoot up, the stems may be reduced to one or more as desired, a quantity of manure may then be forked into the surface, and the stakes placed in position, one to each plant, and with the exception of tying the stems securely, there is little more trouble necessary. A small mound of ashes placed over each crown as protection in winter, generally keeps the roots safe and sound. We have known them in the midland counties of England and Ireland to stand ordinary winter without any protection whatever.—" Florist and Pomologist."

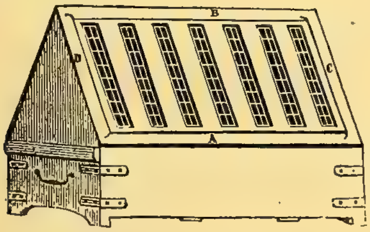
Notice to Correspondents.—Various correspondents are reminded that we never name plants or fruits unless the full name and address of the sender be given.

No. 303.] SATURDAY, SEPTEMBER 8, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

BRINGING PLANTS FROM ABROAD.

To introduce tropical plants to this country successfully, care should be taken to time matters so that the vessel should not reach English waters during the winter season. Many instances could be quoted of fine specimens having borne a long voyage and arrived in the English Channel in good order, but the cold there had absolutely killed everything. Similarly, it is extremely unwise to send out cases of tender plants from England during the winter months, unless such cases can be very carefully tended and sheltered until the vessel reaches warmer latitudes. A cheap and perfectly efficient plant-case is represented by our woodcut. It is strongly made of good deal or some other wood which does not readily warp. One side of the upper portion is fixed, the other marked A B C D can be wholly removed, and represents the front of the case. Half-a-dozen gimlet-holes should be made in the bottom, which must be covered with an inch or so of any good draining material. A quantity of moist earth is placed over this, and all is ready for receiving the plants, which may or may not be in pots. Before actually placing these, however, it is better to nail firmly a strong strip of wood all along the back, just above the level of the soil; then pack in the plants in rows so as to allow battens to be easily fixed between these rows. After planting give a moderate watering, and let the whole stand for a day or so in order that the soil may settle and the superfluous moisture escape. Non-success is often attributable to the too wet condition of the soil. A batten is now put between each row, with one end under the long piece already in position; all that is now wanted is another long piece to hold securely the near ends of the short cross-pieces. If this be done properly (and too much care cannot be expended on these details) the case will stand all the knocks and rough handling in transit without injury to its living contents. The width of the cross battens must be determined by the size, &c., of the plants or pots packed. In order to effectually exclude the air, the lid is screwed down on a layer of putty; each side should be glazed with crown glass (three squares will be found quite sufficient for an ordinary-sized case), and a very strong close piece of wirework should be fixed on it; this serves the primary purpose of guarding the glass from breakage, but also is of great use in somewhat subduing the light. The case should always stand upon feet so as to allow the salt water to run freely away underneath whenever a wave comes on board. We are aware that there are patent cases with special contrivances for ventilation, &c.; such a one as figured can, however, be made cheaply by any carpenter, and if the conditions we have defined be well adhered to, no one need wish for anything better. It is often advisable to place seeds in the soil of the case. From Seemann's "Popular History of Palms" we learn that "when Allan Cunningham was in New Holland he sent a case with living plants to the Royal Gardens at Kew, which on being disturbed was found to have, instead of the crocks usually placed at the bottom of such cases for drainage, seeds of a Palm, nearly all in process of germination. Cunningham's attendants, too indolent to look for the crocks, had substituted the seeds of the Livistona australis, which happened to be more handy. These young plants were carefully nursed, and one of them has now become one of the gems of the collection of Palms at Kew. The discovery that the seeds of Palms could be introduced most effectually by being in their native country at once placed in mould was not overlooked by Mr. John Smith, ex-Curator of Kew Gardens; he made it widely known, and to its diffusion more than to any other circumstance must be mainly ascribed the great increase of the collections of Palms in our horticultural establishments." Seemann availed himself of the knowledge thus accidentally obtained, and was in this manner enabled to introduce several rare species into our gardens. As every one knows, some seeds retain their vitality but for a very short period, and, in many instances, the plants producing these are of vast commercial importance. We will instance two—the Liberian Coffee (Caffea liberica), and one of the India-rubber-yielding plants (Hevea brasiliensis). So short a time do the seeds retain the power of germination, that it may be looked upon as next to impossible to introduce the species by means of seeds to many of our distant colonies. Here the plant case helps us out of our difficulty, for by its means living plants are easily transmitted, thus saving time, expense, and anxiety. Owing to the diseases which have caused enormous damage to the Coffee plantations in some countries, the Liberian Coffee —a stronger and altogether more robust plant than the older species (the Arabian Coffee), and which is expected to withstand the attacks of both animal and vegetable parasites much better—has excited the hopes of Coffee planters in all parts of the world to the highest degree. As its seeds, however, do not always germinate here on their arrival, even after much care has been spent on their collection and quick transport, it is unnecessary to add that the chances of their growing in a distant colony are very materially lessened. From Kew we learn that out of 70,000 seeds of Hevea brasiliensis only little more than 3 per cent. grew, although no pains had been spared in gathering, packing, and bringing them to England with all despatch. One thousand nine hundred plants, part of the produce of these seeds, were transmitted in thirty-eight plant cases to Ceylon, and of that number 90 per cent. arrived at their destination in perfect condition. Had the seeds been sent direct to Ceylon instead of to England, where every attention was bestowed on them from the moment of their arrival, total failure must have been the result. Now it is reasonable to hope that the cultivation of the Hevea in India may succeed. If it does, the Rubber will become, as Quinine already has, a most important and valuable article of commerce. Prior to the introduction of glazed cases, the difficulty experienced by collectors was very great. Of course, the mass of their plants were packed in the hold of the vessel, and were killed by the exclusion of light. Menzies, on his return from his last voyage round the world with Vancouver, lost the whole of his plants from this cause. Other botanists, who managed to place their living specimens on deck, always lost an enormous proportion owing to the salt spray and the extremes of temperature to which their plants were forced to submit. In the passengers' cabin on board ship, there is but little room for plants; nevertheless, by dint of careful watching, rare plants have often been kept alive during long voyages without further shelter than that afforded by the cabin itself. In 1717 Mons. de Clieux was put in charge of several Coffees for Martinico. The voyage was long and the weather unfavourable, so all the plants died but one, with which, when the crew were put on short allowance of water, Mons. de Clieux shared his portion. His self-denying care deservedly met with success; for the plant throve and was the parent stock whence the neighbouring islands were supplied. Q.



Case for Conveying Plants.

INDIAN AZALEAS AT MESSRS. ROLLISSONS'.—There may now be seen a very interesting phase of the culture of Azaleas in the Messrs. Rollissons' nurseries at Tooting. For several years the young stock, and even numerous specimens, have been planted out in the open ground, and with the best results. They are of course in beds of prepared soil, and are potted and removed indoors in autumn, and planted out again in early summer. The growth being made out-of-doors is clean, healthy, and firm. The beds of Azaleas treated in this way are now well worth a visit.

ALPINE FLOWERS AT HOME.

When I wrote of the flowers of the Riffel, I overlooked two which had every claim to mention, from their intrinsic merits and their abundance—Androsace glacialis and Draba aizoides. The former of these seems to have a limited range in respect of altitude, growing, I believe, within pretty much the same limits as Eritrichium nanum, seldom, if ever, below 8000 ft. or 9000 ft. above the sea-level, and necessarily soon stopped in its upward course by the absence of all needful conditions of vegetation. No flower can well be more beautiful than it is when closely inspected, almost more gem-like than resembling ordinary blossoms, scarcely raised above the snow-trodden grit where it finds a home, showing next to no leaf, and itself of unruffled regularity in point of form, though the little stiff petals partake of every shade of colour, from pure white to the brightest rose. I have tried more than once to cultivate it, but with so little success that this time I could not bring myself to lay sacrilegious hands on it again. Draba aizoides is a stouter, more ordinary plant, and though probably its Swiss luxuriance is not likely to be attained by many cultivators, it will make itself contented on our lowlands. Around the Riffel it helped Androsace Vitaliana to sprinkle the moist hollows with patches of bright gold. In thus singling out those which I have, I wish it to be understood that I found my selection on such beauty as qualifies its possessor to become a subject for horticulture, and also on its general occurrence. Several rare plants only occurred in single specimens, or were chiefly of interest to the scientific botanist, which I have consequently made no mention of. The village of Zermatt stands on what may loosely be described as the meeting point of no less than four glaciers, the two more considerable ones debouching more or less northwards from Monte Rosa and the Matterhorn, and the intervening chain; the other two eastwards and westwards respectively. The one which flows westwards (for glaciers are frozen rivers, flowing as steadily as the Thames or Severn, if more slowly) is called the Findelen glacier, and has some plants of its own in the valley to which it gives its name. They are, so far as I could ascertain, for the most part, rather botanical than horticultural, if my distinction be admissible. A few of the latter deserve special notice; and the first which has prominently fixed itself on my memory, from its soft, tender beauty, is Anemone Halleri. I must leave to others to speak of its aptitude for cultivation, for as to this I know nothing whatever, having never seen it in any garden, nor having been able to find it in any gardening book which has fallen in my way; but it is a very distinct and beautiful species, and I found it in considerable abundance round and near a little tarn by the glacier side, just emerging (with that graceful, bashful bend which is so characteristic of some of the higher Alpines) from its winter mantle, its thick, downy, much-divided leaves harmonizing with the pale mauve of the interior of the corolla. I could only wonder what had hindered so striking a plant from establishing a home amongst our naturalized treasures. The other plant which I have in my mind is one which an ordinary flower-gatherer might possibly pass by as only a free-growing Myosotis sylvestris, which, by some freak, had left its usual haunt on the sunniest pastures for out-of-the-way holes and corners more or less in the shade. But a closer inspection, especially of the seed-vessels, which were little, oblong, prickly nuts (whence its name, Echinospermum deflexum), would soon reveal its true character, and add another distinct plant to our collections, which, so far as appears, may be as capable of cultivation as its congeners of the Myosotis family. The highest pastures on the north side of the Findelen Valley, just under the Little Rothhorn, offered specimens of a very interesting family of plants (the habits of which under cultivation I shall be glad to learn more about), in the shape of Oxytropis cyanea, lapponica, and, I believe, uralensis. A very minute botanical distinction separates these from the Astragalus family, of which I before mentioned A. monspessulanus as quite a feature of the main Zermatt Valley, and may now add A. aristatus. Phaca alpina, another kinsman, is to be found very commonly in the high, moist pastures, and, if in cultivation it prove as graceful as in its untrammelled freedom, will be amongst the chief ornaments of our rockeries. I must not leave these regions—"Alps" as they are technically called—by which is meant not mountains, but mountain-pastures, where cattle feed in the short summer—without alluding to the Potentilla family, which were well represented. P. grandiflora was very handsome on the sunny slopes, P. frigida grew above the Riffel, and P. nivea is also, said to do so though I did not succeed in finding it. The first of the three should have a place in our collections, and ought to have its wants supplied without much trouble. I should like to notice, while the subject occurs to me, the tendency that exists amongst Alpine plants—at any rate, in their higher habitats—to put forth white flowers. My explorations this summer were necessarily very short, but in the course of them I came several times—as, indeed, I mentioned before—on white Viola calcarata; at other times on Linaria alpina, Campanula barbata and rhomboidalis, Primula farinosa, and Gentiana verna, if not on others which I have forgotten, exemplifying this pretty variation. Has the shortness of the summer, and the consequent strain laid upon vegetation, to enable it to go through its allotted functions, anything to do with the phenomenon? Certainly there is nothing like the same amount of albinism in the flowers we raise in our gardens. I must reserve for another number some other Zermatt flowers, which it would be sheer injustice to omit. Canonicus.

LATE GOOSEBERRIES AND CURRANTS.

As additions to the dessert these are highly appreciated, more especially during such a season as the present, when stone fruits are, as a rule, very scarce. I find medium-sized Gooseberries, with a firm and rather thick skin, to be the best for hanging late, as the large, thin-skinned varieties that are preferred during the ordinary Gooseberry season are sure to split during heavy rains; the sweet kinds when over-ripe also lose their flavour, and are decidedly surpassed by those which, when moderately ripe, have a sharp acid flavour. Red and White Currants are also both very useful, for although as a rule the flavour of the White kind is preferred, the mixture of the two has a pretty effect, the Red variety being very bright under artificial light. Although they may be preserved on ordinary bushes by means of netting, they are best on walls with a north aspect, on which few crops are more prolific or certain, and in such positions they can be easily protected from birds. We usually plant them about 3 ft. apart, and train up the required number of shoots about 6 in. apart, spurring them in quite closely in winter. During summer the shoots of the Currants are pinched in to three or four leaves, for if left at full length the foliage at the base of the shoots gets overgrown and falls off, whereby the keeping quality of the fruit is injured. When once the trees are fully furnished with spurs they only require an annual pruning of the simplest kind, and let the season be what it may, I have never known those on walls to fail in producing an abundant crop. Of Gooseberries we find the Warrington, Rumbullion, and Smooth Yellow, and of Currants the Red and White Dutch, and Warner's Grape to answer best. J. Groom.

Henham.

The Brighton Aquarium Fernery.—This fine example of Mr. Pulham's handiwork improves in appearance as it gets older. The only fault to be found with it—if fault it may be called, and that not Mr. Pulham's—is its scantiness of verdure. True, there are a few Tree Ferns, Indian Rubbers, and other vegetation, but not nearly enough. Mr. Pulham's bold, natural-looking rockwork, with its waterfalls and dripping caverns, needs skilful draping, not with the view of concealing the rocks, but for the purpose of setting them off to increased advantage. This ought to be easy enough, considering the great wealth of plants which we now possess for that purpose. The roof or terrace garden is better planted; its beds of Lobelias, Alternantheras, and other low-growing plants at the base of the vases, divided into compartments by means of terra-cotta divisions, are very pretty, and the vases themselves are well filled with showy plants. These vases, which are made of terra-cotta and graceful in design, Mr. Pulham informed me will withstand frost without injury, as will also the neat terra-cotta edgings that keep the boundary fringe of Euonymus in its place. This shrub stands the salt spray with impunity, and soon grows into a large bush, which, along with the Tamarisk, forms the staple shrub vegetation of Brighton. The fish caves, so well constructed by Mr. Pulham, that are filled with sea Anemones—flowers of the ocean, as they have been called—deserve a word of praise. They are the best specimens of the kind which I have seen under artificial conditions.—M.

NOTES OF THE WEEK.

Notes from Dublin.—It may interest some of the readers of The Garden to know that in an exposed position facing the sea, in Sir Francis Brady's garden at Dalkey, Diosma ericoides has proved itself to be perfectly hardy, having now been out-of-doors for three severe winters. In the same garden I noticed a plant of Erica McNabiana in full flower, which had also overcome the hardships of three winters. Romneya Coulteri has now fairly established its claim to be placed amongst half-hardy plants; in spite of incessant rain and cold, it flowered very well on a south border at Glasnevin, one bloom measuring 4½ in. in diameter. At the last show of the Royal Horticultural Society of Ireland some very fine plants were exhibited, two of the most interesting being a fine specimen of Lapageria alba, with over fifty blooms on it, and a good example of Philesia buxifolia in full bloom. Messrs. Rodger M'Clelland & Co., of Newry, staged a very good collection containing several new and interesting plants, conspicuous among which was a fine Croton called Etna, with very bright leaves, something in the way of those of C. Veitchi, but superior. From the same firm also came seedling tuberous Begonias, which were pronounced by Mr. Gumbleton, an authority on such subjects, to be the finest he had ever seen.—F. W. Moore, *College Botanic Garden.*

The International Show at Carlisle.—This opened on Thursday last, and had many attractions. Hothouse plants generally were well represented, and shown in very large tents. Our principal London nurserymen, such as Messrs. Veitch, Williams, and Bull, showed large and remarkable groups of new and rare plants. There was also a very fine show of fruit and vegetables, dinner-table decorations, &c. Out-of-doors there were fine collections of Conifers shown by Messrs. Little & Ballantyne, Barron, Dickson & Turnbull, and others. Mr. Colman, of Eastnor Castle Gardens, won the first prize for a collection of fruits, Mr. Johnson the second, and Mr. Ingram the third, the whole of the collections being remarkably good.

The Golden Chestnut in Scotland.—We have received from Messrs. Dicksons & Co., Waterloo Place, Edinburgh, specimens of this Chestnut in flower and fruit, the latter well guarded by reddish, brown-tinged spiny husks. The leaves, which are not unlike those of a Myrtle, are glossy green above and golden beneath. The plant from which these specimens were cut, Messrs. Dicksons state, is 3 ft. 9 in. high and 2 ft. 9 in. through. It has been planted out in the Redbraes Nursery for the last nine years, and is a very perfect specimen—quite the finest we have seen. It has flowered for the last three years, but the seed has never come to perfection.

Cochliostema Jacobianum.—The large plant of this in the Holloway Nurseries, which was noticed in The Garden as being in flower early in June, is still flowering freely, and to all appearance will continue to do so for some time yet to come. Such effective plants as this, which yield brilliant flowers in succession for so long a period, cannot well be too highly prized for decorative purposes.—C. S.

Potatoes Produced from a Pound of Seed.—We have received the following report concerning the produce of our six new sorts of Potatoes grown this year near Dartford. One pound of each was planted, and the results are that Centennial yielded 26½ lb.; Covent Garden Perfection, 38 lb.; Superior, 48½ lb.; Success, 46 lb.; Lady Webster, 23 lb.; and Improved Peach Blow, 77 lb., being 259 lb. from 6 lb. of seed.—Hooper & Co., *Covent Garden.*

Pear Beurré de l'Assomption.—We have received some good specimens of this Pear from Mr. Rivers, of Sawbridgeworth. This is a somewhat new variety, obtained from seed by an amateur, Mons. Ruillé de Beauchamp, at Groupillère, near Nantes. It is remarkably fertile and vigorous, and grows perfectly on the Quince. It forms regular, well-furnished pyramids. The flesh is white and soft, juicy and sweet, and it is slightly but delicately perfumed; the fruit is rather gritty towards the centre. It is a Pear of the first quality, and is with us at maturity from August to September.

Effects of the Wet on Hardy Primroses.—The rains which we are now having are inducing a luxuriant leafy growth in the case of all hardy Primroses and Polyanthuses, and thus giving promise of a rich yield of blossom next year. With this new leafage come many new crowns, and strong plants may be lifted next month and be hand-divided, replanted, and yet in the spring produce good heads of flower. As evidence of what may be done with a hardy Primrose, I may say that early in the spring I lifted from the open ground a strong seedling plant with a single crown. This was exhibited two or three times at South Kensington, was then divided into four, and repotted. They remained in their pots all the summer, and I have now just redivided them into thirteen good strong plants. This is the result of keeping the plants cool and constantly growing. Hardy Primroses should have no summer rest, but may remain quiescent during the winter until excited into growth and flower by the advancing spring. Primula denticulata and purpurea have done remarkably well, and although their foliage flagged greatly during hot sunshine, yet they seem to be none the worse for it, and the present moisture has brought about a complete revival. Less robust kinds, such as P. nivalis, intermedia, Munroi, marginata, and others, have thriven remarkably well both in and out of pots.—D.

Luculia gratissima in Flower.—Last spring I obtained a plant of this from the nursery in a 6-in. pot, and planted it in a new house and in a newly-made border consisting of light loam, peat, and leaf-mould. The plant has made growths upwards of 2 ft. in length, several of which are now in flower, and have each four lateral shoots close below the flower-truss. These will probably flower in the winter with the other shoots. Its being in bloom now is probably the result of its robust growth.—John Garland, *Killerton, Exeter.*

Cyathea Burkei.—This is one of the most graceful of tree Ferns of recent introduction. Its stems, which are stout and erect, are surmounted by large heads of deep green fronds of a gracefully pendent habit. Succeeding as it does in a moderately warm conservatory, this Fern may be classed as one of the most useful of its kind. Large importations of it have lately been made by Mr. Williams, of Holloway, in whose nursery may be seen some fine examples of it.—S.

The Colorado Beetle Stamped Out.—The "Cologne Gazette" says that all fear of ravages by this wearisome insect in the neighbourhood of Mulheim seems now to be past, thanks to the energetic measures taken by the authorities of the district. Since the discovery and destruction on July 30 of the last brood, sixteen men have been constantly engaged in examining all the Potato fields in the place. Dr. Harenstein, of the Poppelsdorff Academy, the Government Commissioner, who has weekly inspected the fields, has now declared the danger past.

Godetia Lady Albemarle.—A mass of this Godetia in Messrs. Osborn's nursery is just now very attractive. Its flowers, which are large and of a brilliant crimson colour, are produced in profusion for several months in succession. Amongst hardy annuals, this is one which should have a prominent place. It is also a valuable plant for pot culture.—S.

A Late-flowering Gentian (Gentiana septemfida).—We are indebted to Mr. E. Farrer, jun., of Petygards Hall, for a pretty coloured drawing of this fine hardy Gentian, which he finds to thrive better than most others, and to be a very beautiful late-flowering kind. "It flowers well on either the heavy clay or light loam, still those who can obtain the latter for it will be amply rewarded. It seems to prefer a sunny spot, and to be able to open well its blossoms and show the beauty of their colour; but to me the best points in its character are that it flowers at a time (July and August) when dwarf perennials are scarce, especially blue ones; and it does not so readily or so soon close up at evening as the rest of the family. I purchased it under the name of G. gelida."

Othonna crassifolia.—This succulent plant of recent introduction has a pendulous habit and Mesembryanthemum-like leaves, and when grown in small hanging-baskets or in pots placed on pedestals, it is both useful and ornamental, being generally beset with small yellow flowers. It might be grown successfully as a window plant. We saw a quantity of it in the Victoria Nurseries the other day growing in pots and drooping over the sides, not only of them, but over the shelves on which they were placed with good effect.—S.

Battersea Park Garden.—Notwithstanding a singularly unfavourable season, this is now very beautiful in the main. The carpet beds are protected at night by canvas stretched over hooped sticks, giving the place in the early morning somewhat the appearance of an encampment. The best of the so-called carpet beds are those with stately plants—like Dasylirions—in them; in such cases the carpet takes its true place as the representative of the small plants that often carpet the ground beneath trees and shrubs. Spiræa Lindleyana is very beautiful by some of the quiet, grassy-margined shrubberies here.

Archdeacon Denison on Potatoes.—Archdeacon Denison's harvest home, which took place last week, was of the usual pleasant character. The Archdeacon in the course of some observations said he had entirely abandoned the planting of Potatoes, as they only rotted in the ground. He recommended his hearers to sow Beans, Peas, and Beet, and plant Greens in their place. The Archdeacon is perfectly right: the Potato fungus is a pest which rushes from leaf to leaf freely when the Potatoes are sheeted with water; hence it is absent or not injurious in dry countries. There are regions perfectly suited to the Potato and extensive enough to supply many times more than the present demand. Obviously it is wisest to grow in a wet country vegetables not destroyed through rain, but rejoicing in it.

A NEW METHOD OF PROPAGATING PLANTS.

Our correspondent, Mr. Peter Henderson, fully describes in the "American Agriculturist" a new and very successful method of propagating Geraniums and many other plants, which is an improvement made by him on an earlier process known as "layering in the air." This consisted in tonguing the shoot to be used as a cutting half through with a knife, as in the ordinary layering; the shoot so treated formed granulations, or "callus," on the cut surface, and was in a condition to form roots immediately on being detached and put into the earth. In the new process, instead of tonguing the shoot to be used for a cutting, it is merely snapped short off, at a point where the condition of the shoot or slip will make it hang on to the plant by the merest shred of bark. Slight as this strip of bark appears to be, it is sufficient to sustain the cutting, without any material injury from wilting, until it forms the "callus," or granulated condition, which usually precedes the formation of roots. The cutting or slip may be detached in from eight to twelve days after it has been broken in the manner described, and then potted in 2-in. or 3-in. pots. If watered and shaded rather less than required by ordinary cuttings, it will form roots in eight or twelve days more, and not one in a hundred will fail, even of plants of the Tricolor Geraniums, which are difficult to root under the ordinary modes of propagation, particularly in hot weather. Of the success of this method, and the classes of plants to which it is applicable, Mr. Henderson says:—We last autumn propagated in this way nearly 10,000 plants of the Tricolor class, with a loss of 1 per cent., had we adopted the ordinary method, even with the plants in good condition, our experience has been that a loss of at least 50 per cent. might have been expected. This plan is applicable to many other plants as well as Geraniums; we are now using it with excellent success on the new double Poinsettia. The following plants may be also propagated with great certainty by this method, using the young, unripened shoots:—Abutilons, Begonias, Carnations, Crotons, Cactus of all kinds, Heliotropes, Lantanas, Oleanders, Petunias (double), Pelargoniums or Geraniums of all kinds, together with nearly all plants of a half-woody or succulent character. Besides the absolute certainty of having the cuttings root by this method, it has another most important advantage. All propagators know that many kinds of plants, when cut back for cuttings, become weakened so much that if not carefully handled they may die; also that if two or three crops of cuttings are taken off as they grow, the "stock plant" becomes permanently injured. By this method of breaking the slip, so that it hangs by a shred to the parent plant, the roots have to use their functions for its support nearly the same as if it remained entirely attached to the plants. This results exactly as we wish, in causing the parent plant to strike out shoots below the broken slip, and these again in their turn can be so treated. This process will be useful not only to florists but to amateurs, as it is both easy and sure, and we have no doubt that many of our readers will be interested in trying it.

Centaurea americana.—This Centaurea, an annual of sterling merit as a garden flowering plant, a native of Arkansas and Texas, is a comparative stranger in cultivation. It is described by Dr. Gray as from 1 ft. to 2 ft. high, but the plants now growing in our garden are 4 ft. high. They are stout-stemmed, rather sparingly branched as compared with their size, but every branch and branchlet are terminated by a flower-head, of which from fifteen to twenty-three decorate each plant; the open heads are from 3 in. to 5 in. across, of a pale purple colour, and very showy. They begin to bloom about the middle or 20th of July, and go on flowering till September. In spring we raise and otherwise treat them as we do Stocks, Asters, Zinnias, or Drummond Phlox, and towards the end of May transfer them to the garden plots in clumps of three. At night, and after being cut and kept in a shady place, the flowers close up, the heads then looking like a painter's brush. These brushes, whether on the plants or as cut flowers in the house, open as beautifully as ever ere sunrise next morning. C. americana var. Halli (according to Mr. Falconer, in "Rural New Yorker") only differs from the typical plant in having the flowers of a deep rich purple colour, and perhaps a little fuller and more compact. Nor does it close up so noticeably or quickly as does the true americana. It is not a garden-raised variety, but is a native of Texas, where it was collected and disseminated by Mr. Hall, in compliment to whom it was named.

Exhibitions of Wild Flowers.—The following, cut from a local paper, shows how much a gardener may do in the study of native plants, even within the limits of a country seat. A great feature of the exhibition which took place the other day at Henley-on-Thames was a collection of 228 varieties of wild flowers, all found near Henley, contributed by the Botanical Class of Park Place, which is conducted in connection with the Science and Art Department of South Kensington by Mr. Stanton, gardener to Mr. Noble. The arrangement of this large number of flowers was most artistic and effective, and must have involved no small amount of labour.—G. S.

Tree Carnations Planted out.—These are yielding a fine crop of flowers that are highly esteemed in a cut state, and which carry on the season of Carnation blooms from the time when the ordinary outdoor varieties of Cloves, Picotees, and Carnations are over until the winter supply from spring-cut plants is ready under glass. These, after supplying cut flowers during the winter and spring, are usually set out-of-doors during April, as they become denuded of flowers, and after being hardened off in a sheltered position, are planted out in May either in mixed borders or in beds in the reserve garden, where, if attended to as regards moisture during periods of drought and tying up the flower-spikes as they approach maturity, they invariably well repay that attention by an abundance of blossoms.—J. Groom.

The Dove Orchid (Peristeria elata).—In your last issue (see p. 201) reference is made to a plant of this in the Botanic Garden, Birmingham, which is bearing two flower-spikes on which are forty-five blossoms and buds. We have here a plant which has had ten spikes upon it, another that has had five, and a small one that has had two spikes. On these I have counted as many as seventy flowers open at one time, and some of the strongest spikes have borne about thirty flowers and buds. These Peristerias have been growing amongst ordinary stove plants; though not showy, they are great favourites with many, and as they flower at this comparatively dull season as regards indoor plants, they merit more attention than they generally receive. Single flowers of them when mounted are well adapted for bouquet-making; they also last a long time in a cut state, and emit a delicious perfume. The pseudo-bulbs of this plant are unusually large, some of them here measuring upwards of 9 in. in circumference.—Robert MacKeller, *Abney Hall, Cheadle.*

The Potato Crop.—On reading Mr. Fish's article (see p. 199) on this subject, I notice a great difference between the time of the Potato ripening in his locality and in this, the western part of Co. Cork. The disease attacked Potatoes in this neighbourhood as early as the 28th of May, and many kinds had lost all their leaves and stalks by the end of June. All my Potatoes to be saved for seed have been out of the ground since the end of July, and are spread out separately on the wooden floor of a loft, having open skylights in the roof. I find this to be the best way in which to keep Potatoes to be used for planting, as they remain very firm, and are always well sprouted by planting time. I grow ten varieties, and of these Rivers' Royal Ashleaf, Extra Early Vermont, and Berkshire Kidney, when dug out, were found to be almost free from disease. Flounders, Lapstone Kidney, Snowflake, and American Red, were nearly half of them bad; and Eureka and Brownell's Beauty were a mass of rottenness. The only kind I have which has withstood the disease is a local one called Hero; it is a large pink-skinned Potato with deep eyes, and is a very heavy cropper. In this neighbourhood Potatoes are much smaller than usual this year, and are, as a rule, badly diseased. The weather has been dreadfully wet for some weeks past.—John Clarke, *Cork.*

Garden Churchyards in London.—The Rev. W. Abbott, the rector, and the churchwardens of St. Luke's, Old Street Road, applied to the Chancellor, at the Consistory Court, on the 24th ult., for a faculty to convert the closed burial ground of the old parish church of St. Luke's into an ornamental place for trees and flowers. There was no opposition to the plan, and the inhabitants were in favour of the proposed improvements. The rector explained that it might be necessary to remove some of the memorial stones but no remains. At a recent vestry a resolution was unanimously passed to effect the required alterations, and £500 had been voted for the purpose. The Chancellor said the faculty would be given in a few days.

Mountain Ash-tree Berries.—A girl, four years old, named Campbell, has died at Greenock from the effects of having eaten a quantity of Rowans or Mountain Ash-tree berries.

TREES AND SHRUBS.

THE LAWSON CYPRESS AND ITS VARIETIES.

To the inhabitants of the North Pacific coast this Cypress is better known as Port Orford Cedar, Port Orford, on the Oregon coast, being one of its native habitats. It was, however, originally discovered in the Chasta and Scots Valleys in Upper California by Mr. W. Murray, of San Francisco, who, twenty-three years ago, sent a small consignment of its seeds to Messrs. Lawson & Sons, of Edinburgh, who offered them for sale at the rate of £5 a single seed. No better proof of its qualifications as an ornamental evergreen tree can be given than when I say that in Britain it is annually raised from home-grown seeds by the million, and that it is to be met with almost everywhere, in place and out of place, in the gardens of the poor as well as in those of the rich—here as a single specimen of almost unrivalled grace and beauty, there in groups, or adding variety to the mixed shrubbery; and often, but as yet not too often, forming beautiful and ornamental hedges. So accommodating is it as a stock, that not only are all its own distinct varieties grafted on it, but also other species of Cypress and members of very distinct but, of course, of cognate genera. Singular however as it may appear, it will have little or nothing to do with what botanists consider its nearest blood-relative—C. Nutkaensis. They suggest to one the truth of the old adage, "Friends agree best when separate." Cupressus Nutkaensis, as a scion, unites kindly with C. Lawsoniana, but the union is not a happy one and very soon comes to an end through the death of the scion. It may interest some to know that C. Nutkaensis makes a perfect and lasting union with Juniperus virginiana and J. communis. Mr. Murray found the Lawson Cypress a handsome tree, in some instances 100 ft. in height, with a trunk 2 ft. in diameter. In this country it has already attained a height of from 20 ft. to 30 ft.; but although its timber is said to be good and easily worked, it will never, I fear, excel as a timber tree with us in Britain. Its proper place is as an evergreen decorative plant, and as such it has, at least among Cypresses, few if any equals. Being perfectly hardy, and not too particular as to soil, it luxuriates almost everywhere, but prefers a heavy, damp soil to a light or dry, sandy one. In the latter it is subject to premature sickening of the leaves, and, ultimately, defoliation. But this Cypress, like the majority of Coniferous plants, is less fastidious as to soil than it is to climate; it delights in shelter rather than exposure to cutting winds. As a cheap, effective, and ornamental hedge plant it has few equals. Its shade of green is more cheerful than that of any other plant at present devoted to such a purpose; and its gracefully recurved feather-like branchlets form a pleasing relief to the rigid shoots of the Holly and even the Yew. Plants of large size may be advantageously used for this purpose, but small ones, say from 18 in. to 4 ft. in height, are preferable, as they can be clipped and headed back until a proper base is formed on which to build the superstructure. A distance of from 12 in. to 18 in. apart (according to the size and habit of the plants) will be found sufficient; but of course a greater distance is requisite where large specimens are required to screen unsightly objects. About the beginning or not later than the middle of September, and again in spring when the shoots show signs of new life, are good times for clipping; but of the two early autumn is probably the better time, as the shoots then clipped are not so liable to be displaced and bent down by snows in winter, which would, were the shoots left untouched, give the hedge an irregular and ragged appearance. Plants of this Cypress are sometimes to be seen of a sickly hue and in a partially defoliated state; and people very naturally attribute such a condition to the occurrence of some constituent in the soil that does not suit the plants. It will, however, generally be found that mishaps of this kind are the result of poverty at the roots, and will in nine cases out of ten disappear after a generous top-dressing of well-rotted manure. Many plants, when under diverse cultivation, present a greater or less degree of variation from the normal type, and particularly is this the case with the Cypress under consideration. In the short space of time during which it has been under cultivation in Europe, many very distinct varieties in habit and colouration have been obtained, and are now extensively cultivated. But, unfortunately, all the varieties named in trade lists do not deserve the consideration of planters; I shall, therefore, briefly describe a few of the best.

The Lawson Cypress (Cupressus Lawsoniana).

[Synonyms—Cupressus fragrans (Kellogg), Chamæcyparis Lawsoniana (Parlatore), Chamæcyparis Boursieri (Carrière).]

Green Varieties.

Cupressus Lawsoniana erecta viridis.—This is an erect, tapering tree of moderate growth, thickly and closely inlaid from base to top with compressed twiggy branches and branchlets of the richest green; indeed, it is quite unique as regards beauty, and never needs pruning and clipping.

C. L. argentea.—In this we have a dense, oval shrub of a silvery, bluish-green, with the points of its branches gracefully recurved. It is of moderate growth, and doubtless never will attain any great size: it is therefore a suitable subject for planting in forecourt gardens.

C. L. gracilissima.—This has the same habit of growth as the preceding, but is characterised by thinner and more twiggy branchlets; it is also of moderate growth.

C. L. nana.—This form has been in cultivation almost as long as the species, and yet is seldom to be seen over 2½ ft. in height. It is of an ovate shape, with stiff, erect, flattened branches and branchlets. It is represented by two distinct seedlings, the one bright green and the other bluish-green; the latter is the best.

[Synonym—pygmæa]

Self-coloured and Variegated Varieties.

C. L. lutea.—Although this has only been in existence some five or six years, it has already received several names. Its peculiarity is its colour, which is throughout the growing season a rich golden yellow, and even in the autumn and winter months it is only slightly subdued into greenish yellow. It is of good form and vigorous, and indeed all that can be desired for relieving the monotonous green of our shrubberies; but to do it justice, it is necessary that it be fully exposed to the sun. There need be no fear of it being scorched, for it is as immutable as the parent species.

[Synonym—aurea.]

C. L. pyramidalis alba spica.—This is a dense, pyramidal small tree, with the bark and leaves of the vegetating shoots of a chalky whiteness. Although of good colour when exposed to the sun, it will, unlike golden variegated Conifers generally, be improved by being planted in shady positions.

C. L. alba variegata.—This is of an upright habit, without ever reaching to any great height, with branches almost regularly blotched and striped with yellowish-white. It is consequently rather pretty and a most befitting subject for enlivening a shrubbery.

C. L. aurea variegata.—This differs from the preceding in its branches being loosely spreading, and in the variegation being of a golden yellow.

There are other very promising varieties in cultivation, but they are of recent introduction, and consequently not yet fully tested. J. R. W.

Bedfordshire.

Californian Buck-eye (Æsculus californica).—I am glad to see attention directed (see p. 205) to this ornamental lawn tree. Surely no better proof of its merits as a handsome flowering tree need be given than that you, who have seen it forming one of the most striking details of the scenery of the valleys and foothills of California, should endorse all that Mr. Berry has said in its favour. I first made its acquaintance in the neighbourhood of Monterey about the beginning of November, 1866. By that time it had long been denuded of its foliage, but the large, smooth, pear-like fruit still depended from its numerous erect branches. Subsequently I met with it at intervals from Monterey, north-west throughout the broken coast range to Clear Lake, either growing singly or in small groups in the valleys as round-headed, middle-sized trees, or on hillsides as large shrubs, which were, when in leaf but particularly when in flower, the most striking objects in the more immediate landscape. It is quite true of this tree, as is quoted from the "Botany of California," that "the leaves often fall before midsummer," and no wonder, considering that the uncultivated soil of the districts in which it grows is entirely dried up by that time; but from this drawback the people of damp-soiled, rainy Britain have nothing to fear.—GEORGE SYME, *Elvaston Nurseries, Borrowash.*

Liliputian Rhododendrons.—In THE GARDEN of July 28, 1877, there is an interesting account of a new method of inducing Rhododendrons to flower at a very early age. A similar method of grafting in August with flower-buds that will thus bloom during the following spring has also been much practised by Messrs. S. B. Parsons & Sons, of Flushing, New York. Last June, at the exhibition of the New York Horticultural Society, this firm showed a fine collection of the choicest varieties of Rhododendrons treated in this manner. I would only suggest, as an improvement on the directions given for propagating, that the pots containing freshly-grafted plants be plunged in a cold frame during the winter, where roots, branches, and buds will retain more dormant and normal conditions than in an ordinary greenhouse. If forced Rhododendrons be desired, it is always advisable to select such varieties as possess most of the East Indian, ponticum, or caucasicum nature, the Catawbiense, and still more the maximum, kinds being less fitted for such work on account of their late season of blooming.—P. S.

Influence of Temperature on the Germination of Pine Seeds.—Some experiments were recently made by M. Velten, of the Vienna Academy, with a view to determine the influence of a previous warming on the development of Pine seeds. The latter were kept in darkness and sown in shallow glass vessels, the bottoms of which were covered with wide-meshed nets. The seeds were heated four hours to 40°, 45°, 50°, 55°, . . . 100° C, and then left to germinate. Seeds gathered in 1872 in a locality in which the Fir thrives well, first showed that the greatest number capable of germination occurs in the case of unheated seeds—that, with raising the temperature the germinating power gradually diminishes, and that through one hour's heating to 80°C, the nil point of germinating capacity is almost reached. The heated seeds nearly always germinated more slowly than the unheated; but a quarter of an hour's heating had hardly any influence. The germinating force also showed a decrease with rise of temperature, and gradually approached the zero point. In a second series of experiments seeds of Pine cones collected in another region, in the autumn of 1875, showed that a heating to 40° had hardly any influence on the germinating power. On raising the temperature to 70°, however, the germinating number was observed repeatedly to rise, but without reaching that of the unheated seeds. The germinating force, on the other hand, presented, as in the former case, a gradual decrease, with raising of the temperature. Further experiments were made, in which the previous heating of the seeds was continued longer, the lower the temperature; and, lastly, experiments were also made with like seeds at different times after they had been gathered. The following deductions were arrived at:—(1) The germinating percentage, as well as the velocity of germination, gives no certain indication as to the germinating force of the seeds; and the converse also holds good. (2) The heating of the seeds may have a favourable or an unfavourable influence on the germinating capacity and the germinating force, according to the physiological condition in which the seed is. (3) The duration of heating of the seed is of essential influence on its development, inasmuch as long heating at lower temperatures can produce the same effect as short heating at higher temperatures.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Carolina Prunus.—This for a Southern American tree thrives uncommonly well in London. It is seldom seen out of Kensington Gardens. It is very glossy in foliage and has a good habit. It is P. Caroliniana (Aiton), the Mock Orange, Wild Peach, &c., of the Southern States.

Griselinia lucida and Eurybia corymbosa.—Although the first-named of these is not quite hardy, it is a very effective evergreen shrub, and is well worth planting in sheltered situations. The Eurybia bears beautiful Aster-like flowers, which are also very showy. Any one who will give these two shrubs a trial will, I feel sure, be satisfied with them.—W. S.

Acer dasycarpum.—In 1843, Mr. Emerson measured a tree of this species, growing in the town of Stockbridge, Mass.; when at 3 ft. from the ground, it girthed 12 ft. In October, 1876, the same tree was measured by Mr. W. R. Robinson, who reports that its circumference at the same height was then 16 ft. 9 in., showing an annual average increase of circumference during the last thirty-three years of a little over 1·36 in.—"American Naturalist."

Abies Engelmanni.—The English papers continue to discuss the differences between Abies Engelmanni and A. Menziesi. Some say that "because it pushes out earlier than Abies Menziesi, A. Engelmanni is unfitted anywhere for the north of Europe." We know of a specimen which is undoubtedly A. Englemanni, because it was taken from an altitude of some two miles up the mountain, where A. Menziesi does not grow, and which we examined in company with Dr. Parry himself recently, and which we are satisfied is hardy enough for any part of Europe.—"Gardener's Monthly."

The Oriental Plane.—An unjust prejudice may have worked, more or less, against the Oriental Plane by confusing it with the American Plane (Platanus occidentalis), a tree vastly inferior in outline, durability, and health. The Oriental Plane tree is entirely hardy, and quite valuable to the landscape gardener for the creation of his larger and more prominent effects. Our list of popular shade trees is too limited. Everywhere we see little else but Maples and Elms. A very agreeable variation of this sameness might be made by more extended employment of this well-tried Plane tree, and the diversity of effect accomplished would prove perhaps a stimulant to the taste for larger collections of fine Oriental trees. [So writes Mr. S. Parsons, of Flushing, in the "Cultivator," and that one so experienced in trees should say it makes these statements the more remarkable. In England generally, the American Plane is by far the finest tree !]

THE FLOWER GARDEN.

NOTES ON THE BEST PYRETHRUMS.

A great improvement has been effected during the past few years in this family, principally through the exertions of the late Mr. Salter and others. The old Pyrethrum roseum, for instance, has been so improved that we have flowers equalling the finest of the French Asters, but with the additional advantages of being perennial, hardy, and producing abundant bloom at a time when flowers are comparatively scarce. They are in perfection in May and June, and, with the Iris and Pæonies, form a glorious group, which ought to be well represented in every garden. They are also invaluable for autumn decoration, for if cut down after flowering in June, they flower again in autumn. They are easily propagated by division of the root and by seed, but the latter mode I would not recommend, as the proportion of good flowers from the best of seed is remarkably small. A good rich loam suits them best, and the more well-rotted manure is incorporated with the soil the better the plants grow, and the more luxuriantly they flower. Mulching, especially in dry soils, is very advantageous, as it keeps the ground moist and cool. The following comprise the best of this family:—*White and White Shaded*—Boule de Neige, delicatum, Madame Billiard, Nancy, niveum plenum, Olivia, Argentine, Prince de Metternich, and Ne Plus Ultra. *White with Yellow Centre*—Bonamy, Impèratrice Charlotte, La Belle Blonde, virginale, and Voie lactée. *Purple and Red*—Mrs. Dix, rubrum plenum, Mons. Barrel, Brilliant, and Wilhelm Kramper. *Crimson*—Michel Buchner, Miss Plincke, Modèle, multiflorum, Prince Teck, Progress, Emile Lemoine, and Marquis of Bute. *Carmine and Pink*—carminatum plenum, Charles Ballet, floribundum plenum, Gloire de Stalle, imbricatum plenum, Nemesis, fulgens plenissimum, Haage et Schmidt, and Iveryanum. *Yellow*—sulphureum plenum, Solfaterre. *Lilac and Rose*—Comte de Montbrun, delicatissimum, Dr. Livingstone, Gaiety, Galathèe, Hermann Stenger, Lady Blanche, Lischen, Minerva, Uzziel, and roseum plenum. A. P.

Pyrethrum roseum.

AN OLD-FASHIONED COTTAGE FLOWER GARDEN.

Allow me to describe a delightful old place to which I had free access some years ago, where the effect produced was always pleasing, although the expense of keeping was next to nothing, as the occupier did most of the work himself. As a matter of course, although the garden was full of flowers at most seasons of the year, and weeds and litter were always promptly removed, there was no attempt at what may be called fine gardening. There had originally been Box edgings to the paths, but these had been removed and in their place were wide, low masses of Sedums, Saxifrages, Cerastiums, Aubrietias, Arabis, and similar plants of low, spreading growth, all along the front of the borders. These were not often cut in or otherwise interfered with, and, as a consequence, after meeting they spread out here and there over the edges of the paths in a wavy sort of outline that had a somewhat picturesque effect, especially in spring, when the bulbs that had been planted amongst them pushed up through the dense carpet. White and Provence Roses formed good-sized bushes in this garden, and the old-fashioned Monthly Rose was nearly always in flower. There were, too, good-sized bunches of Southernwood, Rosemary, and Lavender; these formed, so to speak, some of the more permanent features of the place, but there were, in addition, many interesting plants and bulbs, some modestly peeping out from under spreading branches of Roses or Lavender, others standing boldly forth challenging notice and admiration. Beyond all these, moreover, there were distinct phases which the occupier called, for want of a better name, his flower shows, three of these being his Wallflower, Larkspur, and Michaelmas Daisy displays. The Wallflowers in spring certainly were lovely, and the atmosphere around seemed loaded with their fragrance. There was no attempt at formal planting in this garden; indeed, many of the plants were self-sown, and bloomed where the seed fell, now growing singly out of masses of Sedum, and further on gathered together into a bold mass or group. The same occurred in the case of the Larkspur, which was the common single variety, and both these and the Michaelmas Daisies, which flowered in autumn, were sufficiently numerous to give a character to the garden during the time when they were in flower. When borders are planted altogether on the mixed principle at regular distances apart, there is a tameness and formality about them which these showy phases relieve. Thus, after the Wallflower display in spring, there comes a quiet resting time, and one is better able to appreciate the scattered beauties amongst the mixtures before the Larkspurs burst forth. The latter require little or no trouble or care, either to sow or plant, and there is an airiness and grace about their erect and slender flower-stems that is pleasing in a garden of this kind; even the seeming carelessness or want of method in their arrangement sets them off to better advantage than if they were planted by means of line and rule. I do not mean to assert that all gardens should be like this, but what I plead for is that all who have gardens, if they really wish to derive the greatest amount of pleasure from them, should, instead of copying from others, think and act for themselves. There is, I have reason to know, a large amount of latent enthusiasm connected with gardens and gardening; it is only necessary to touch the right chord to draw it forth, and then gardening will become a necessity to the many as it is now to the few. It is not a question of means, but one of "loving care." Gardening can be learned and practised during times of leisure, and, comparatively speaking, almost without cost. It has been said that many old-fashioned plants, about which many are inquiring now, cannot be obtained, that they were thrust on one side to make room for the favourites of the hour, and have through neglect perished, but in a commercial country like ours, when a demand arises for anything it is sure to turn up, and it must not be forgotten that with many kinds of hardy plants we are far better supplied now than we were twenty years ago. The Phloxes, Pentstemons, Pyrethrums, Pæonies, Potentillas, Delphiniums, and many other good subjects, have undergone a great improvement at the hands of the hybridist, and much yet remains to be done. Take the Michaelmas Daisies or perennial Asters, for instance, how rare they have comparatively become! and yet I remember that they were common enough in every country garden thirty years ago. These and similar plants must again come to the front, and those who cater for the public wants would do well to be working up a stock of them. E. Hobday.

PLANTING HARDY BULBS.

As the season for planting the majority of bulbs is now fast approaching, a few remarks on those which I have found most satisfactory as permanent occupants of beds and borders may not be unacceptable to those who have positions where they can be allowed to grow undisturbed. Give them a situation well prepared at first; plant them with due consideration as to their future development, and they will every succeeding season come up with increased strength and vigour. Amongst positions in which I have seen Lilies, Gladioli, Narcissi, Hyacinths, and similar bulbs grow most luxuriantly, are beds of such shrubs as Rhododendrons, Azaleas, Kalmias, &c., or permanent Rose beds or banks on which the spade is never used, or herbaceous borders backed up and sheltered by shrubs. There need be no fear that the soil will not suit them, for if the ordinary occupants of such beds flourish, and the ground has been previously deeply cultivated and enriched, even small bulbs will soon be found to increase in size both as regards blossoms and bulbs. Beds containing Rhododendrons and similar evergreen-flowering shrubs planted in an ordinary mixture of peat and loam, will not only suit Lilies and Gladioli admirably, but the blossoms of such bulbs intermixed with the shrubs will set them off to advantage when they are not in flower. I have planted scarlet Gladioli in such positions, and between rows of standard Roses, for yielding spikes for cutting, and they have annually increased in strength and effectiveness, while amongst dwarf Roses and on the edges of herbaceous borders the whole race of dwarf early spring-flowering bulbs succeed admirably, the shelter afforded by the Roses being decidedly advantageous in breaking the force of the wind. Lilies do well in borders, and when cut flowers are in request during summer, they well repay any attention that may be bestowed upon them; and even a small collection will yield a long and varied supply of exquisite flowers. Those bulbs, however, which are easiest of culture, the hardiest, and which yet yield the most delicate blossoms in even the poorest soil, are the Narcissi and Jonquils. Both are such strong-rooting plants that even when robbed at the roots and overgrown by stronger and statelier vegetation, they will continue for an indefinite number of years to throw up foliage and flowers that can scarcely be surpassed by any plant in existence, and only equalled by some of the choicest exotics.

Henham. J. Groom.

NOTES FROM IRELAND.

Romneya Coulteri.—The first estimate of the value of this interesting stranger as a hardy flowering plant has been more than realised. We had recently an opportunity of seeing it at Glasnevin, and the first glimpse of it with numbers of its flowers open did not fail to draw forth an expression of surprise and admiration. The Glasnevin specimen, though only struck from a cutting in the spring of last year, is now some 6 ft. high, 4 ft. or more through, and every branch and branchlet are terminated by a flower or flower-bud. The expanded flower is fully 6 in. across, quite flat, delicate in texture, and pure white in colour; from the centre rises a great ball of gold, formed by the close globular aggregation of anthers innumerable, forming with the petals a brilliant and beautiful contrast of white and gold. The flowers remain perfect for three or four days, and there is a constant succession of them open. The protection afforded the plant during the past winter was of the most trivial kind, namely—a bit of bast mat thrown over two or three stakes. It is doubtful if even this be absolutely necessary, a slight protection over the roots, we apprehend, being all that is really required, perhaps not even that. The present cold, sunless, wet summer was by no means best calculated to bring out its grand flowers in the quality and profusion seen under Californian light and sunshine. Nevertheless, here we have it now blooming freely and profusely for some weeks, and likely to continue to do so for some weeks to come. In regard to it, therefore, three things are, we think, fairly established—firstly, its perennial character; secondly, its hardihood; and thirdly, its early flowering and very striking and highly ornamental aspect. To the botanist, Romneya Coulteri is a very interesting plant, as being the connecting link between the Orders Papaveraceæ, Nymphæaceæ, and Sarraceniaceæ; to people in this country it is also interesting, by reason of the genus being founded by our distinguished countryman, the late Dr. Harvey, and the name of the genus being given in honour of another distinguished Irishman, Dr. Romney Robinson, of Armagh, and further, the specific name commemorating the name and memory of Dr. Coulter, one of the most eminent professors of the Royal Dublin Society.

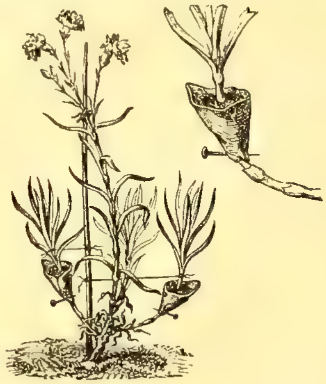
Pancratium (Ismene) calathinum Flowering in the Open Border.—This beautiful Amaryllid has flowered finely this season in the open border at Glasnevin, where it has grown and flourished without the least protection for the last five years, but did not flower till the present one. It is, moreover, now swelling seeds When planted out it was only a single bud, now there are several and quite a tuft of strong and vigorous foliage. Here, then, we have another and rather unlooked-for addition to our hardy bulbous plants.

Eucalyptus globulus at Killarney.—One of the handsomest and most promising specimens of Eucalyptus that has come under our notice is that growing at Dinas Island, Killarney, facing the Tore or middle lake. It is now some 50 ft. high, perfectly symmetrical, and apparently quite at home in that fairy and favoured region. There is a second one growing within a short distance of it, and about the same height, but not so evenly furnished.

Limnocharis Humboldti in an Open Tank.—It is to be regretted that this lovely and most floriferous aquatic is not more availed of for outdoor work. It is one of the most effective plants for a tank or quiet bit of water. The small outdoor tank near the Victoria-house at Glasnevin is nearly monopolised by this plant, and at this season few features of the garden are more attractive to visitors. The tank is only about 10 ft. or so in length and 3 ft. in breadth, and in this circumscribed space we counted the other day over 160 flowers floating on the surface.—"Irish Farmers' Gazette."

LAYERING CARNATIONS IN LEADEN CUPS.

It is in cups of well-rolled lead, according to the "Fleurs de Pleine Terre," that the celebrated cultivator of Carnations, M. Gouthier, of Pierrefitte, has so successfully practised their propagation by layering. The lead used for these cups is rolled out to the thickness of strong paper, and then cut into triangular bands. These are formed round the finger to a shape somewhat like a small sugar paper. The soil employed is fine, and the same as that used for culture in pots; threads serve to support the cups in position, and a pin thrust through helps to secure them and keep the layer in position.



NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Rudbeckia bicolor.—I can quite endorse everything which Mr. Thompson of Ipswich says (see p. 176) about this new annual. The yellow-rayed flowers are set upon a bed of green undergrowth like an Aster—the dark centre being surrounded when in full bloom by a margin of yellow fringe, making it altogether one of the prettiest of our annuals. I am trying what autumn sowing will do for it. We amateurs who despise the absurdity of ribbon and carpet bedding should be grateful to Mr. Thompson who has given us two such flowers as Rudbeckia bicolor and Helianthus cucumerifolius.—W. H. C., *Kensington*.

The White Betony on Hampstead Heath.—It is interesting to learn that Hampstead Heath still possesses a curious flower. John Gerarde published in London, in 1597, "The Herball, or General Historie of Plantes," and therein, speaking of Betony (Stachys betonica), he alludes to having found a white-flowered one "in a wood by Hampsteede, near Master Wade's house." This pretty flower, now to be seen plentifully on West Heath, is usually a reddish purple.

Shearing Gardeners.—With reference to the expression "shear-like scissors" in the note on "Barber-ous Horticulture" in last week's Garden, allow me to say that the instrument in question is really the common sheep shears. I met three young men armed with them the other morning, and traced them to their "atrocities" committed on some beds of Alternantheras, &c. They set to work mutilating, shearing, and nipping these, supported on a plank placed over the bed. I may add that it was not in the extensive grounds surrounding Bedlam where I witnessed this.—Q.

THE FRUIT GARDEN.

MINIATURE MELONS.

Melons are appreciated by most people during the hot days of summer and early in autumn, but many attempt their culture who do not meet with the success that their efforts merit, while many are deterred from attempting their culture from fancied difficulties that lie in the way, and which only exist in the imagination. Failures arise from ignorance of a few simple facts. The essentials of success in Melon growing are: First, a bottom-heat ranging from 75° to 85°, and a top-heat of from 65° to 90°, and this is easily commanded during summer with a common garden frame and one square yard of any kind of litter that will ferment slowly. A few barrowloads of stable manure and an equal amount of tanner's bark make a good hotbed; but littery straw with leaves, sawdust, or even part of an old hotbed mixed with it to moderate the stable-yard manure or straw is a good thing, and in favoured districts success is often attained without any fermenting material. Second, the variety is of some importance to those who have only a spare frame or so to devote to Melon culture; and this is another fact often lost sight of by many who are possessed of the best appliances, and who venture to instruct those who are otherwise situated. Little Heath is a good Melon for amateur cultivators who have little space, as it is hardy and is not a shy setter, while its flavour is good, although second-rate as compared with some of our finer white and green-fleshed sorts. There is another Melon, which we have grown for a few years under the name of Golden Queen, but it differs a good deal from the one under that name in commerce, inasmuch as it is a small grower, and requires, therefore, little space; it is an excellent Melon, good in flavour, and is the hardiest and best bearer with which we are acquainted, Little Heath not excepted. Soil, too, is a main point with most writers on Melon culture, and that generally recommended—a good loam—is undoubtedly the best. But with a free-fruiting variety, this is of less importance than when the varieties grown are what are called shy setters. A good medium garden soil, to which a little bone dust has been added, contains all the essential elements necessary to produce a good crop of Melons, especially if some guano or similar substance be mixed with the water given them when growing. The training and pinching is a somewhat important affair, as by being properly trained they are so regulated that crowding is guarded against, and when properly pinched, the food which the leaves elaborate is diverted into the formation of fruit. In writing for the instruction of others, it is often difficult to apply the instruction given so as to suit all cases. Perhaps a description of the way by which we successfully raise a fine crop of Melons annually in a very small pit might meet the case of many who have similar places, and so be the means of furnishing many a table with a good supply of Melons from odd corners which may be thought too small for the purpose. Having a pit, not originally intended for the cultivation of Melons, along the front of a stove of the width of 3½ ft., which would be idle in summer, it is devoted to Melon culture. As there is a pipe along the front, and as a barrowload or two of fermenting material is added to serve as bottom-heat, and a board between this and the pipe to keep it clear, the space is reduced to 2 ft. Nevertheless, in this small space several varieties are grown; but during the present season we have discarded all except the one just described, which is truly a miniature Melon. The plants are prepared in the usual way, stopping them in all cases when they have made two rough leaves. This causes them to throw out two or three shoots, which are reduced in number, leaving two only as nearly equal in strength as possible. A plant is put in at every 4 ft., and when the shoots have pushed 1½ ft. they are stopped. By this time the laterals are pushing, and, in the case of the above variety, are showing fruit at the first joint on every lateral. All laterals are pinched at one joint beyond the fruit, and all further growths are rubbed off. If planted in a good depth of soil (with no manure except bone meal), and if they be afterwards fed with manure-water (after the roots are in possession of the soil), every fruit will set and swell. Most varieties will not do this with the growth restricted to such miniature dimensions as they are in my case; indeed, few would show fruit in so small a state. Even Little Heath is shy when so restricted. But when all that set are fairly swelling up, they are reduced to six or eight, and these come to be fine-flavoured Melons of about 1 lb. each—a useful size for an amateur's table, much better perhaps than one large one weighing 8 lb., and which would be more than half lost. In a common frame we would plant two plants, prepared by pinching as above, one within 1 ft. of the back of the frame, and one fully 2 ft. from that nearer the front of the frame; and we would pinch and train in the same way, and would feel sure of obtaining from 16 lb. to 24 lb. of fruit from a common frame. We never allow crowding of foliage, but we do not thin it; we prevent it forming by judicious pinching, and fill every inch with leaves. We expose fully to the sun and give air whenever possible. Heat, by means of the pipe in front, is seldom or never applied during the summer months—and this in a cold, exposed district, some 400 miles north of London—and yet we are very successful.

Miniature Melon-plant in pot.

In conclusion we may add that we have this year grown a few varieties in 6-in. pots, and have fruited every one of them. Of course one fruit to a plant was all that was allowed to set, and that when fully grown was necessarily small in each case. The experiment has convinced us that a good quantity of fine fruit could be grown in a very small space, although we do not recommend the use of such small pots for Melons. The plants were kept small by pinching. The seedlings were pinched whenever they had made rough leaves. The plants then threw out from three to four shoots, which were in their turn pinched to one joint; and on the laterals which issued from this joint the fruit appeared at the first joint, at which all the growths were finally pinched, and any further growths were kept rubbed off and only one fruit was allowed to swell, although on several plants two set. The experiment was made to ascertain what is the smallest-sized pot in which a Melon can be induced to fruit in perfection when fed on proper food. The above is our experience so far as regards growing miniature Melons.—"Field."

EXPERIMENTS IN VINE-GRAFTING.

I have for a considerable number of years experimented with the view of proving what influence certain Vines, as stocks, produced on others grafted on them, and *vice versâ*. So far the results have been both instructive and interesting. In grafting Gros Guillaume on the Muscat, and not allowing the stock to make any growth, not even to develop a single leaf, the result was bunches somewhat more compact than the general run of Gros Guillaume bunches, more regular and larger-sized berries, and a colour exceeding in density that of any other Grape, except the best finished examples of Black Alicante. This variety, grafted on the Muscat, and allowed to develop itself in the proportion of one to two rods of the Muscat on which it is grafted, has been very much increased in fruitfulness, and bears freely on the short-spur system of pruning. The shape of the bunch has, however, been entirely changed; the large shoulders characteristic of Gros Guillaume when well grown being wanting, the bunches having assumed a long tapering shape. The colour of the berries has not been nearly so dense—in fact, they have been more of a grizzly colour, some berries colouring to nearly black on one size and grizzly on the other. The flavour has been appreciably improved, and the wood of the Vine ripens very rapidly and perfectly. On the other hand, the effect of one strong limb of Gros Guillaume on the two limbs of the Muscat is to deteriorate them, as well as to influence the character of the foliage considerably. As compared with other Muscats on which no other Grape has been grafted, the limbs are weak, there being a tendency to shank in the bunches, and the foliage goes off early in the season with streaks of straw colour, much the same as Gros Guillaume goes off streaked with claret and crimson. The two Muscat limbs are also much more subject to scorching from intense sunshine than are the Vines entirely Muscat. These effects are distinctly realised, and are very conspicuous at the present moment: an entire Muscat being beautifully green in foliage, and the Vine next to it with two Muscat rods and one of Gros Guillaume, with the Muscat portion of the foliage going off into straw-coloured streaks, like the Gros Guillaume. The fact is the latter is deteriorating the character of the Muscat, while the Muscat stock and limbs are exerting a most marked influence on the Gros Guillaume.

Gros Guillaume grafted on the Black Hamburgh comes very fine in berry and colour for about three years, after which it deteriorates, becoming less fruitful and much smaller in bunch and berry. On one Black Hamburgh grafted with Gros Guillaume we have allowed a spur of the Black Hamburgh to grow on each side of the stock, about 6 in. or 8 in. below the union of the stock and scion. This was allowed in order to see the effect of a large spread of Gros Guillaume foliage on the small amount of Black Hamburgh stock growth. Last year, as it happened, there were two bunches on the Black Hamburgh spurs, and there was no appreciable effect on the fruit, but the leaves assumed the shape of those of Gros Guillaume, and went off in autumn with exactly the same crimson colouring of that variety, while no other Hamburgh foliage in the same house did so. This season there is just one bunch on the Hamburgh spurs (they having apparently become less fruitful); but that bunch, although hanging over the hot-water pipes, has just, like those of Gros Guillaume on the same Vine, begun to colour, while the Hamburgh bunches round about it are black. The berries are also much less in size than the other Hamburghs. The foliage on the two portions of the stock are this year again much more cut and pointed, and will no doubt change, like those on the main limb of Gros Guillaume, into crimson as they ripen.

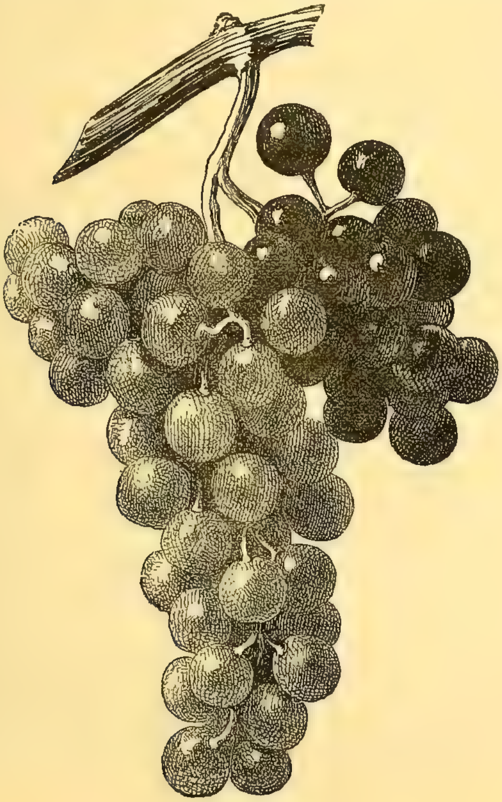
In the case of Muscat Hamburgh, it has been found that grafted on Black Hamburgh, and the stock and scion allowed to develop in nearly equal proportions, the bunches set better, form more compactly, colour better, and are less subject to shanking than when it is grafted on the same stock and no growth allowed on the stock: the result, in the latter case, being large formed bunches, with more stoneless and shanked berries. Duke of Buccleuch on a Muscat stock, with also a limb of Gros Guillaume, does not succeed well at all. The berries shank very much. In fact, the fellow scion robs and cripples it. On the Black Hamburgh the Duke does well, with the stock allowed to develop itself in equal proportions; but from an eight years' experience of this Grape, we conclude that it does on the Muscat stock, the Vines being allowed to grow in equal proportions. The Vines on which it was thus grown were, however, destroyed. This Vine does very well on its own roots when properly established. The Grizzly Frontignan has done best on the Muscat stock, the latter being also allowed to make growth in about equal proportion. Trebbiano grafted on Muscat, and grown in the proportion of one rod to two of the Muscat, does better than on its own roots; but from its very robust habit it has proved injurious to the Muscat. From our experience, we conclude that any Grape grafted on a given stock derives very little, if any, benefit or harm from the stock after a very few years, if the stock be not also allowed to make growth.—" The Gardener."

Fungus on Vine Roots.—This is not of frequent occurrence, yet it is of very serious import where it does find a footing, and should be carefully guarded against. The difficulty of dealing with it is the want of knowledge of its existence until the Vines are perhaps killed through its effects. The healthy Vines of one season may in the next, when in the fullest vigour, suddenly droop and flag and die, when upon examination of the roots it is found that they are completely covered with small, white threads, these being the mycelium or spawn of some fungus which has generated from decaying vegetable matter that has got into the border. The most fertile agents are pieces of wood, or the broken stems or branches of trees, or it may be the stump of a Vine that has been cut down and left in the border. Therefore, these should all be rigidly excluded in the formation of Vine borders. If once fungus be introduced, its growth is very swift, and the fine threads of the mycelium will soon permeate the whole border, and choke the action of the roots. Fungoid growth may also be introduced into the border through heavy top-dressings of leaves or stable manure. Where its presence is detected, every bit of soil in the least affected should be taken out, and the roots of the Vines washed, sprinkling the remainder with quicklime, so as to destroy every vestige of its existence.

Shanking of Grapes.—Of all the perplexing maladies that affect Grapes this is the worst; other agencies may destroy a crop, or even the plants, much more speedily and completely, but there is no ill pertaining to Vines the true causes of which are so difficult to estimate and to grapple with as this. The term shanking is applied to denote the drying or withering up of the stalks of the bunches and berries of Grapes. Sometimes it is only a berry or two that shanks, at other times it is the whole bunch, and in extreme cases it may be the entire crop. The period when shanking commences is just as the berries begin to change colour or to ripen, and it continues more or less in action until they are ripe. The berries that thus shank or lose the vitality of their stalks never colour or ripen, but they become intensely sour, and they soon decay and require to be cut out. In many cases all that the eye can detect is a minute black speck, or a ring round the stem or stalk of the berry; in other cases the whole stem is quite blackened. It may be noted that shanking is far more prevalent amongst late Grapes than amongst early-forced ones, and again, that it is but seldom seen amongst outdoor Grapes, while some varieties—those of the Frontignan class to wit—are far more subject to shanking than others, such as the Royal Muscadine. As to the causes of shanking, many and varied opinions have been given; it is not so much, we believe, the result of any one special cause, as of a variety of concurrent causes. In a broad or general sense shanking seems to be the result of some overstrain, some bad condition or injury to the feeding or respiratory organs of the Vine. Either the foliage has been in some way injured, or prevented from performing its proper functions, or the roots have got into bad condition and cannot perform theirs, or, it may be, a combination of both these causes may exist. As to the immediate or leading causes of shanking, we shall briefly call attention to some of the principal:—(1) Overcropping.—The crop of fruit must be regulated according to the strength of the plant, and this may nearly be estimated by the amount of properly developed leaves, so that an over-crop of fruit is just tantamount to a scarcity of leaves, an over-straining of the power of the plant, and the result is shanking to a very serious extent. (2) The destruction of the foliage by red spider, burning, or other causes, which, again, is equivalent to a scarcity of leaves. (3) A stripping-off a great quantity of fully-developed leaves at one time, as is frequently done by those who neglect timely stopping, which interference with the foliage affects in a corresponding degree the action of the roots, and so on. (4) The roots getting into a cold sub-soil, or the border becoming sour and soddened, whereby the young spongioles of the roots are destroyed. (5) Borders composed of too rich materials, containing too much organic matter, in consequence of which the Vines may grow with great luxuriance, but seldom ripen the wood well. The roots formed, although plentiful, are very soft and spongy; they do not acquire firmness, but rot and decay during the winter season, and consequently the next season a fresh supply of rootlets has to be produced; then, when the strain upon the energies of the Vine by the advancing fruit crop takes place the roots are not in a proper condition to meet it, and as a result shanking begins. This late production of roots, their decay in winter, and the subsequent shanking, may go on year after year. (6) Excessive dryness at the roots, such as to cause injury to these organs. If the border be allowed to get dry whilst the Vines are in full growth, and be then deluged with water, the young roots will as a consequence be certainly destroyed. These, then, are several of the causes that directly or indirectly lead to shanking, acting either singly or in combination; yet when a case of shanking appears it may be very difficult to trace it to its true origin, or to apply a remedy. Many of the above-named causes may be avoided by good management, as indeed they all should; but where the roots are at fault, either through being in a too rich or a too wet sour border, the only remedy that can be adopted is to take them up carefully, remake the border thoroughly, taking care if in a low or damp locality to use a greater proportion of porous materials than before so as to secure good drainage, and replant them.—" The Florist."

GRAPE SPORTS.

For a white Grape to produce a cluster of fruit partly white and partly black is by no means a common occurrence; but the annexed woodcut shows a case of the kind in a Vine which, until this happened, always produced fruit true to colour. The size and form of the berries were in both cases the same, but the flavour was slightly different. This shows that if it be desired to propagate any particular variety, it is absolutely necessary to mark the shoots destined for that purpose during the time when the Grapes are on them, as without such precaution it is possible that shoots may be taken which have degenerated, or which do not possess the qualities desired to be perpetuated. L. M.



Grape Sport.

Apricot Disease.—Moor Park Apricot, in some situations, is apt to be affected by canker in different parts of the tree, thereby occasioning a partial loss of its limbs. When this takes place in old trees, it is too late to apply a remedy; but its occurrence might be prevented by taking up the young tree after it has been trained three or four years, cutting off close those roots which have taken a perpendicular direction and spreading out the others horizontally, and replanting it again, taking care that the part where it had been budded be kept 6 in. or 8 in. above the surface of the ground. If this be carefully performed, without shaking the mould off the roots, the progress of the tree will be but little impeded by the operation. At the end of three years more this should be repeated in the same manner, after which it will rarely happen that any of those local injuries will take place.—B., *Watford.*

Viburnum plicatum.—I see that nurserymen say this plant (the new Snowball) is very difficult to propagate; I have not found it so. I raised three fine plants from one small layer; but I think it was a two-year-old shoot which I laid down, and my impression is that no shoots came up till the second year. I think if two-year-old shoots were laid down, or if any shoot remain layered for two years, well-formed roots will result. A neighbouring nurseryman tells me he has had like experience.—T. M.

The Golden Age Restored.—Young Lady (through passenger, at West Riding station): "What's going on here to-day, porter? Has there been a *fête?*" Porter (astonished): "Bless thee, lass, there's nea feightin' noo-a-days; 'tis agin t'la-aw. Nobbut a flooer-show."

WINTER TREATMENT OF LOBELIA FULGENS.

This truly handsome herbaceous plant is but seldom seen in thoroughly good condition. Its bold erect habit and strikingly brilliant flowers render it eminently adapted for situations where bright colours and effect are desirable. Planted in masses, backed up by, or in the near vicinity of evergreens, it has a gorgeous effect. Its most congenial situation is amongst the lower shrubs in a border, as sufficient space being allowed for its development, it receives just that amount of shelter which is necessary to ensure its flowering in perfection. I do not think that it is for a due want of appreciation that this plant is comparatively seldom seen, but that few persons have any idea of what it really is when thoroughly well grown. The principal reason probably why it is not so much in general cultivation is that in many localities it is very liable to rot off during the winter, while in a more than usually damp season it is not uncommon to hear complaints of the whole stock disappearing. There are, in fact, very few localities where it may be depended upon to do well from one season to another. Now the great enemy, to the insidious attacks of which this Lobelia is liable, is a kind of rust, which fastens on the main fleshy roots when the plants are gone to rest, and, quickly eating them away, thoroughly rots them, and they eventually disappear. This disease, working as it does from the bottom at a time when growth is at a standstill, is not perceived in sufficient time for its ravages to be checked, and the whole collection, much to the grower's disappointment, will in the course of two or three weeks be completely ruined. This state of affairs is of course very discouraging, and it is not surprising when the same thing has occurred several times, that its culture is renounced in disgust. Having myself experienced much vexation in losing the greater portion of a fine stock in this manner, and clearly seeing that no reliance could be placed upon the plants standing uninjured during the winter in the ordinary way, I was induced to adopt a system for their preservation which I invariably found to succeed, and can now always depend upon having a good stock of healthy vigorous plants with which to work in the spring.

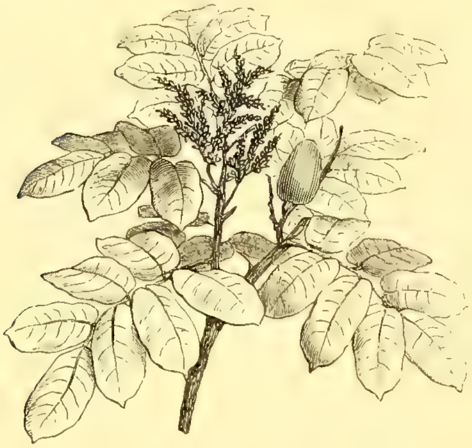
There are perhaps many cultivators who may have been troubled to get and keep any quantity of this fine Lobelia, and who would gladly take a little pains to ensure a good stock of it. I will therefore briefly describe the method which I follow. The disease which attacks the roots, and which ultimately destroys them makes its appearance towards the latter end of October or beginning of November, especially if the weather at that time should set in cold and wet. The plants should then be carefully taken up, preserving as much of the roots as possible, the soil shaken from them, and the roots well washed. If the disease be present it will be readily discovered, as it comes in the form of rusty-looking spots which eat their way into the roots. Wherever these are perceived they must be cut out with a sharp knife, as if only a small portion be left it will suffice to destroy the vitality of the plants. When the plants are thus examined they may be either potted or laid in a frame in some free sandy soil. Very fine specimens are obtained by potting and plunging in a slight bottom-heat, keeping the top quite cool. In about a fortnight they will have made fresh fibre, and this is the great object to be attained, as when once a new root is formed all danger of rotting is past. They may then be placed and kept in a cold frame during the winter, to be planted out where desired in spring: a very fine display may be thus secured. The bottom-heat, however, is not at all indispensable; they will succeed very well indeed if carefully and but sparingly watered after potting.

Although the main object is to secure the plants against the perils of a wet winter, yet they will in any case amply repay for the slight trouble they have given by a greater vigour and more abundant bloom. I once saw a bed of this plant grown for seed at Mr. Benary's nursery at Erfürt some 6 in. in width and about 50 ft. long, protected by a glass span-roof; the sides being open, the effect of this flowering mass was, it is needless to say, truly magnificent. I have occasionally seen this Lobelia flourish and grow like a weed year after year, but I know that in many places it is impossible to get it to do so satisfactorily unless some extra precautions be taken.

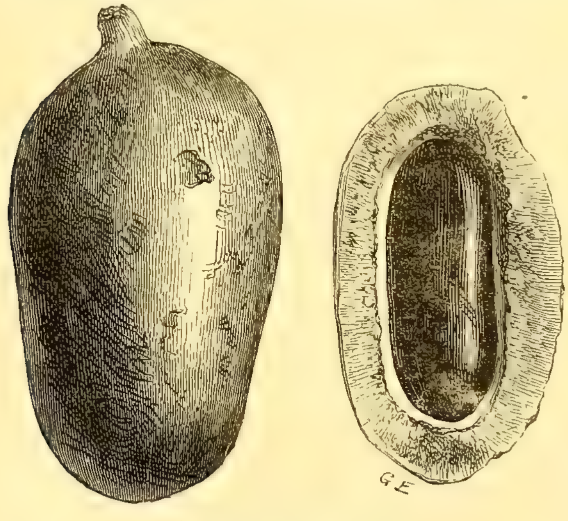
Byfleet. John Cornhill.

THE TONQUIN BEAN.

Considerable interest attaches to the plant represented in the accompanying illustration—the Tonquin or Tonga Bean (Dipteryx odorata), inasmuch as it is one of only eight species included in the genus, all of which are large forest trees of Brazil, Guiana, and the Mosquito coast. The genus is also remarkable for being one of the few belonging to the natural Order Leguminoseæ, that have drupaceous or single-seeded, indehiscent pods. The Tonquin Bean acquires in the forests of British Guiana an average height of about 60 ft. It has alternate leaves composed of from five to seven alternate leaflets. The flowers are borne in racemose panicles, and the fruit, as will be seen, is of a somewhat oval form, consisting of a thick fleshy substance which becomes when mature of a hard, woody character, and encloses a long, almond-shaped, shining black seed. This seed has a powerful odour, resembling that of newly mown hay. At one time, when snuff-taking was much more general than at present, a Tonquin Bean was generally kept in the snuff-box for the sake of the agreeable fragrance which it imparted to the snuff. Now, however, the uses of Tonquin Beans are mostly confined to the preparation of perfumes either for fluid extracts for handkerchiefs or for sachet powders. They are often, moreover, to be seen in hosiers' shops, where they are sold for placing in drawers with linen. For these purposes they are imported into this country to the extent of a few hundredweights per annum. The Creoles fully appreciate the fragrance of these seeds, and make use of them not only for their perfume, but also for putting in chests or drawers for the purpose, they say, of driving away insects. A closely-allied species of Dipteryx, namely, D. eboensis, a native of the Mosquito country, bears a fruit and seed almost identical in appearance with those of D. odorata. It has, however, no perfume, but contains a quantity of thick oil or fat, which is extracted by the natives, and used as a hair oil. It was at one time said that this oil formed the basis of a much-advertised hair-restorer, known as "Balm of Columbia," but of this I am unable to give any opinion. With regard to cultivation, the species of Dipteryx are said to grow best in a loamy soil. They are easily raised from ripened cuttings planted in sand, with a good moist heat, and covered with a hand glass. J. R.



Branchlets of Tonquin Bean Tree.



Tonquin Bean and Section.

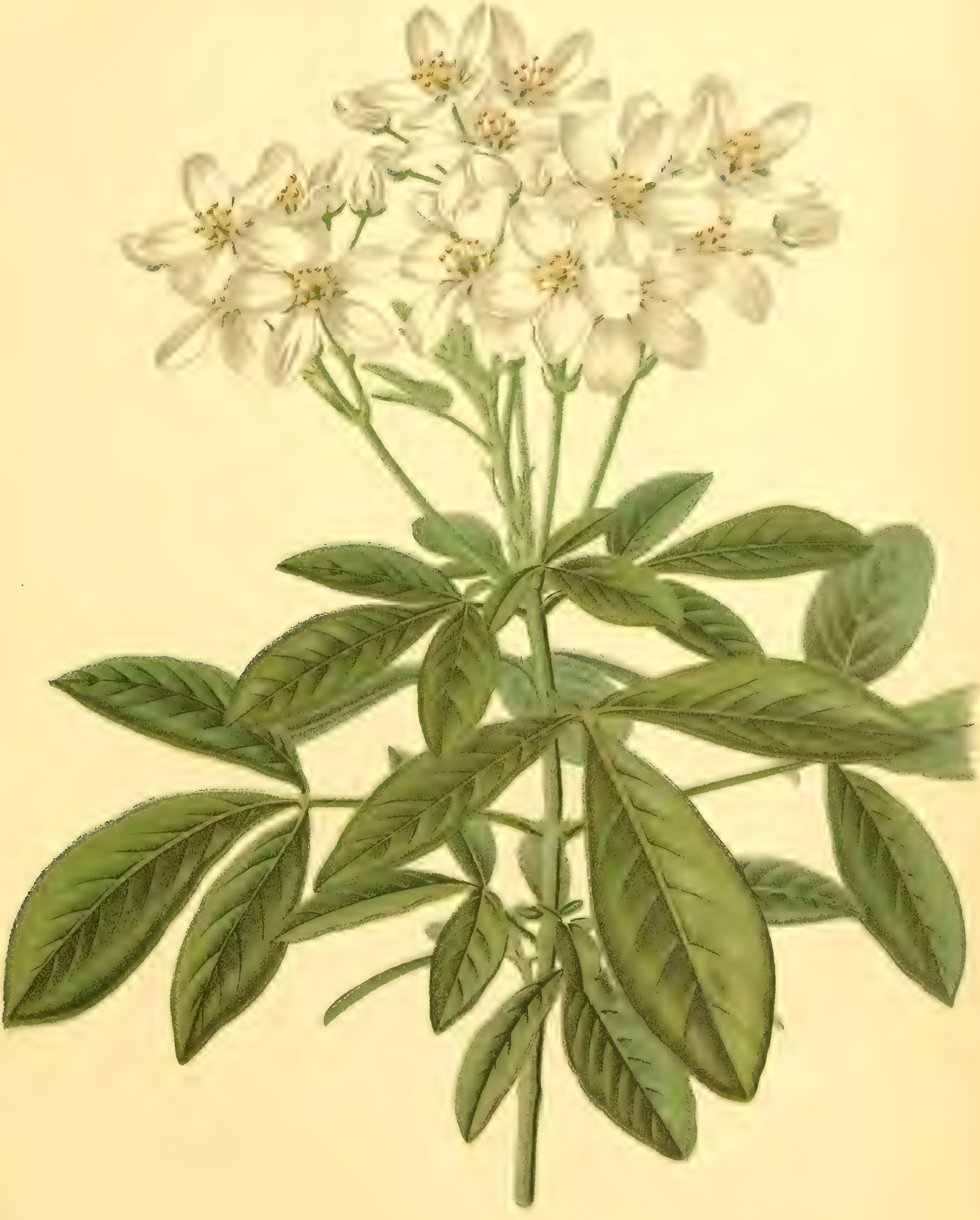
PLATE XC.

CHOISYA TERNATA.

The annexed coloured illustration represents a pretty Mexican shrub well deserving of cultivation. It is found to be hardy in warm, sheltered situations in most parts of the country, and when well grown is very ornamental, producing, as it does, abundance of blossoms during several months in spring and early summer. Even in cold districts it is well worth attention as a pot plant, for where it can have the advantage of a cool house or pit its flowers are produced at a time of year when every spray of white blossom is an acquisition. It may also be used with good effect for conservatory decoration, its glossy leaves of a peculiar tint of green, and panicles of white blossoms forming a pleasing contrast. As a wall plant, either indoors or out, it is likewise valuable. A good example of it used to be found on a south wall in the Wellington Nurseries, St. John's Wood, where it flowered freely every year. Its blossoms resemble in general appearance and scent those of the Orange, for which when the plants are forced they form good substitutes. On the Continent, where it is more plentiful, its flowers are largely employed in a cut state for decorative purposes, and there can be no reason why they should not be so used here, provided the plants were properly prepared for the purpose, and forced like Daphnes, Deutzias, and similar shrubs which yield flowers of no greater value. It would succeed perfectly in a mixture of sandy loam and peat, and, whether grown in pots or planted out, it must have good drainage. It may be increased by means of cuttings made of the half-ripened wood and struck on a gentle bottom-heat. S.

Propagating Centaureas (see p. 201).—I have found these to strike readily in autumn, treated as follows:—Remove from the old plants good stout cuttings with as much stem attached to them as can be had; strip off the lower leaves and clear off the woolly substance, after which dip the stalks in silver sand, which will absorb the moisture; then place two cuttings in 4-in. pots, one at each side, using soil of a stiff, loamy character, liberally intermixed with sand. To each cutting place a small stick, to which tie the leaves in order to keep them from getting entangled with each other and loosening the cuttings, which should be inserted in the soil as firmly as possible. Plunge the pots up to their rims in damp ashes, in a wooden frame facing the north; keep the lights closed for the first few days, then gradually admit air during the night, but keep all close in the daytime. Little water will be required until the plants are struck, and then it should only be given when the soil is nearly dry, and on a fine day when the lights can be left off for an hour or two to dry up the moisture. When well rooted, which they will be in a few weeks, the cuttings may be removed to a rather warmer situation, or the frame may be surrounded by a lining of ashes or straw, and further protection should be given when necessary during the winter, always admitting air on all favourable occasions.—W. S.

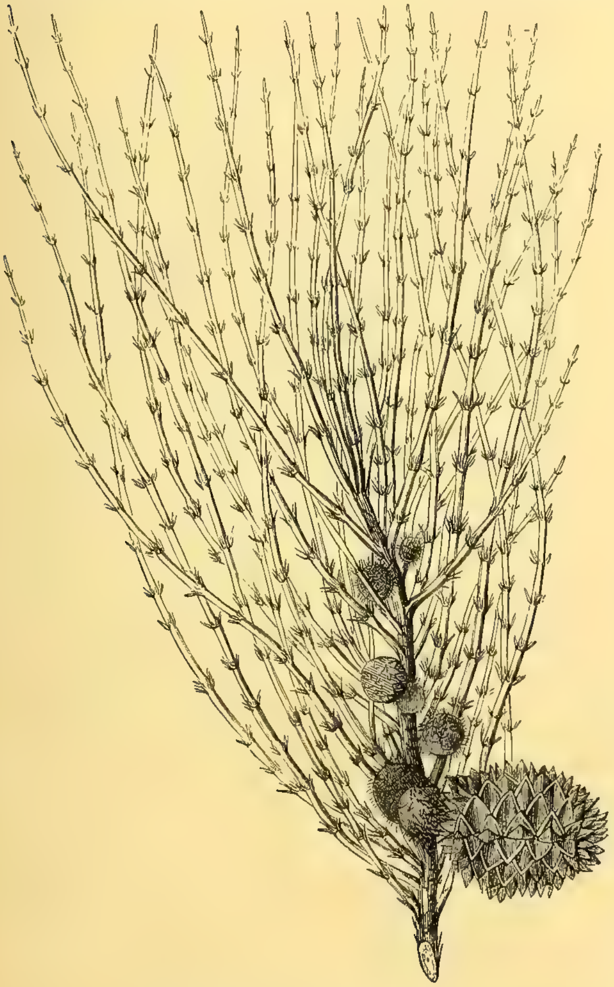
Celtis occidentalis at Home.—A very old specimen of this tree is growing in an exposed situation close to the shore near the Squantum Beach Hotel in the town of Quincy, Mass. Its size is worthy of record. At the ground it has a circumference of 11 ft. 4 in., and at 5 ft. from the ground, just where its short stem is the smallest, it girths 7 ft. A still finer specimen stands in the city of Lowell, and this at 4 ft. from the ground girths 7 ft. 6 in. This is the tree of which a photograph appears in Emerson's "Trees and Shrubs of Massachusetts," second edition, where it is called Celtis crassifolia, although in foliage and fruit it is identical with the form of C. occidentalis common in the Eastern States.—"American Naturalist."



CHOISYA TERNATA

THE CASUARINAS.

Casuarina, so called by Rumphius on account of the similarity of its foliage to the plumes of the Casaor or Cassowary, is the only genus of the natural Order Casuarineæ, and is represented abundantly in tropical Australia. In the East Indies, the islands of the Indian Ocean, and in Madagascar, the species are far less frequent. These very peculiar plants have scarcely any affinity except with the Myricaceæ, from which, however, they differ considerably in habit, and in having a woody, cone-like fruit. They are shrubs, or even large trees, much resembling the Ephedras and Equisetums (Horsetails). Their branches are whorled, jointed, and furrowed, and instead of leaves have striate, many-toothed sheaths surrounding the nodes. The flowers are diclinous or unisexual, the males, each with a single stamen, being produced in spikes at the termination of the branches, and the females collected into dense axillary heads. The hard and heavy wood is used by the savages in the construction of their canoes, &c.; they prefer it, too, for their clubs, lances, and other arms. Living plants of several species may be seen in the temperate house at Kew; their strange and graceful habit make them somewhat conspicuous. Their cultivation is by no means difficult; they prefer a light soil, a mixture of peat and loam perhaps suiting them best, and require a moderate supply of water during the growing season. In favoured places in the open air on the south-west coast probably several kinds would succeed pretty well. C. equisetifolia is perhaps the best known; it is a large tree, and is found in the South Sea Islands and India. C. torulosa is a medium-sized tree with nearly tetragonous, channelled branches covered with corky bark; C. quadrivalvis attains a height of 6 yards; C. stricta has upright branches and altogether a much more rigid style of growth; C. distyla is larger than C. quadrivalvis, and, with that and C. stricta, is a native of Australia. For the cool conservatory all are desirable. Plants raised from seeds make much better specimens than those struck from cuttings; they like a little fresh soil every year. C. tenuissima is perhaps the prettiest of all, and would form a beautiful and elegant living screen that would charm the heart of every plant lover and artist. G.



Fruit-bearing Branch of Casuarina.

THE PLANT-LORE OF SHAKESPEARE.

(*Continued from p.* 213).

Wheat.

(1) *Iris.* Ceres, thou bounteous lady! thy rich leas
Of Wheat, Rye, Barley, Vetches, Oats, and Peas.
Tempest, act iv., sc. 1.

(2) *Helena.* More tunable than lark to shepherd's ear,
When Wheat is green, when Hawthorn buds appear.
Midsummer Night's Dream, act i., sc. 1.

(3) *Bassanio.* His reasons are as two grains of Wheat hid in two bushels of chaff—you shall seek all day till you find them, and when you find them, they are not worth the search.
Merchant of Venice, act i., sc. 1.

(4) *Hamlet.* As peace should still her Wheaten garland wear.
Hamlet, act v., sc. 2.

(5) *Pompey.* To send measures of Wheat to Rome.
Antony and Cleopatra, act ii., sc. 6.

(6) *Edgar.* This is the foul fiend Flibbertigibbet. . . . He mildews the white Wheat, and hurts the poor creatures of earth.
King Lear, act iii., sc. 4.

(7) *Pandarus.* He that will have a cake out of the Wheat, must tarry the grinding.
Troilus and Cressida, act i., sc. 1.

(8) *Davy.* And again, sir, shall we sow the headland with Wheat?
Shallow. With red Wheat, Davy.
2nd Henry IV., act v., sc. 1.

I might perhaps content myself with marking these passages only, and dismiss Shakespeare's Wheat without further comment, for the Wheat of his day was identical with our own; but there are a few points in connection with English Wheat which may be interesting. Wheat is not an English plant, nor is it a European plant; its original home is in Northern Asia, whence it has spread into all civilized countries. For the cultivation of Wheat is one of the first signs of civilized life; it marks the end of nomadic life, and implies more or less a settled habitation. When it reached England, and to what country we are indebted for it, we do not know; but we know that while we are indebted to the Romans for so many of our useful trees, and fruits, and vegetables, we are not indebted to them for the introduction of Wheat. This we might be almost sure of from the very name, which has no connection with the Latin names, *triticum* or *frumentum*, but is a pure old English word, signifying originally *white*, and so distinguishing it as the white grain in opposition to the darker grains of Oats and Rye. But besides the etymological evidence, we have good historical evidence that Cæsar found Wheat growing in England when he first landed on the shores of Kent. He daily victualled his camp with British Wheat (frumentum ex agris quotidie in castra conferebat); and it was while his soldiers were reaping the Wheat in the Kentish fields, that they were surrounded and successfully attacked by the British. He tells us, however, that the cultivation of Wheat was chiefly confined to Kent, and was not much known inland—"interiores plerique frumenta non serunt, sed lacte et carne vivunt" (De Bello Gallico, v. 14.) Roman Wheat has frequently been found in graves, and strange stories have been told of the plants that have been raised from these old seeds—but a more scientific inquiry has proved that there have been mistakes or deceits, more or less intentional, for "Wheat is said to keep for seven years at the longest. The statements as to mummy Wheat are wholly devoid of authenticity, as are those of the Raspberry seeds taken from a Roman tomb" (Hooker—"Botany" in "Science Primers"). The oft-repeated stories about the vitality of mummy Wheat were effectually disposed of when it was discovered that much of the so-called Wheat was South American Maize.

Willow.

(1) *Viola.* Make me a Willow cabin at your gate.
Twelfth Night, act i., sc. 5.

(2) *Benedick.* Come, will you go with me?
Claudio. Whither?
Benedick. Even to the next Willow, about your own business.
Much Ado About Nothing, act ii, sc. 1.

Benedick. I offered him my company to a Willow tree, either to make him a garland as being forsaken, or to bind him up a rod as being worthy to be whipped. *Ibid.*

(3) *Nathaniel.* These thoughts to me were Oaks, to thee like Osiers [bowed.
Love's Labour's Lost, act iv., sc. 2.

(4) *Lorenzo.* In such a night
Stood Dido, with a Willow in her hand,
Upon the wild sea-banks.
Merchant of Venice, act v., sc. 1.

(5) *Bona.* Tell him, in hope he'll prove a widower shortly,
I'll wear a Willow garland for his sake.
3rd Henry VI., act iii., sc. 3.

Messenger. [The same words repeated].
Ibid., act iv., sc. 1.

(6) *Queen.* There is a Willow grows ascaunt a brook,
That shows his hoar leaves in the glassy stream.

. . . .

There on the pendent boughs her coronet weeds
Clambering to hang, an envious sliver broke.
Hamlet, act iv., sc. 7.

(7) *Desdemona (singing).*
The poor soul sat sighing by a Sycamore tree.
Sing all a green Willow;
Her hand on her bosom, her head on her knee,
Sing Willow, Willow, Willow.
The fresh streams ran by her and murmur'd her moans,
Sing Willow, Willow, Willow.
Her salt tears fell from her and softened the stones,
Sing Willow, Willow, Willow.
Sing all a green Willow must be my garland.
Othello, act iv., sc. 3.

(8) *Emilia.* I will play the swan,
And die in music. [*Singing*] Willow, Willow, Willow.
Ibid., act v., sc. 2.

(9) *Friar.* I must fill up this Willow cage of ours
With baleful weeds and precious-juiced flowers.
Romeo and Juliet, act ii., sc. 3.

(10) *Celia.* West of this place, down in the neighbour bottom,
The rank of Osiers by the murmuring stream
Left on your right hand, brings you to the place.
As You Like It, act iv., sc. 2.

(11) When Cytherea all, in love forlorn,
A longing tarriance for Adonis made
Under an Osier growing by a brook.
Passionate Pilgrim, 6.

(12) Though to myself forsworn, to thee I'll constant prove;
Those thoughts, to me like Oaks, to thee like Osiers bowed.
Ibid., 5.

Willow is an old English word, but the more common and perhaps the older name for the Willow is Withy, a name which is still in constant use, but now more generally applied to the twigs when cut for basket-making than to the living tree. "Withe" is found in the oldest vocabularies, but we do not find "Willow" till we come to the vocabularies of the fifteenth century, when it occurs as "Hæc Silex, Aᵉ Wyllo-tre;" "Hæc Salix-icis, a Welogh;" "Salix, Welig." Both the names probably referred to the pliability of the tree, and there was another name for it, the Sallow, which was either a corruption of the Latin Salix, or was derived from a common root. It was also called Osier.

The Willow is a native of Britain. It belongs to a large family (Salix), numbering 160 species, of which we have seventeen distinct species in Great Britain, besides many sub-species and varieties. So common a plant, with the peculiar pliability of the shoots that distinguishes all the family, was sure to be made much use of. Its more common uses were for basket making, for coracles, and huts, or "Willow-cabins" (see No. 1), but it had other uses in the elegancies and even in the romance of life. The flowers of the early Willow (S. caprea) did duty for and were called Palms on Palm Sunday (see Palm), and not only the flowers but the branches also seem to have been used in decoration, a use which seems to be now extinct. "The Willow is called *Salix*, and hath his name *à saliendo*, for that it quicklie groweth up, and soon becommeth a tree. Heerewith do they in some countres trim up their parlours and dining roomes in sommer, and sticke fresh greene leaves thereof about their beds for coolness" (Newton's "Herball for the Bible").

But if we only look at the poetry of the time of Shakespeare, and much of the poetry before and after him, we should almost conclude that the sole use of the Willow was to weave garlands for jilted lovers, male and female. It was probably with reference to this that Shakespeare represented poor mad Ophelia hanging her flowers on the "Willow tree ascaunt the brook" (No. 6), and it is more pointedly referred to in Nos. 2, 4, 5, 7, and 8. The feeling was expressed in a melancholy ditty, which seems to have been very popular in the sixteenth century, of which Desdemona says a few of the first verses (No. 7), and which concludes thus:—

> Come all you forsaken and sit down by me,
> He that plaineth of his false love, mine's falser than she;
> The Willow wreath weare I, since my love did fleet,
> A garland for lovers forsaken most meet.

The ballad is entitled "The Complaint of a Lover Forsaken of His Love—To a Pleasant New Tune," and is printed in the "Roxburgh Ballads." This curious connection of the Willow with forsaken or disappointed lovers stood its ground for a long time. Spenser spoke of the "Willow worne of forlorne paramoures," and though we have long given up the custom of wearing garlands of any sort, yet many of us can recollect one of the most popular street songs, that was heard everywhere, and at last passed into a proverb, and which began—

> All round my hat I wears a green Willow
> In token, &c.

It has been suggested by many that this melancholy association with the Willow arose from its biblical associations; and this may be so, though all the references to the Willow that occur in the Bible are, with one notable exception, connected with joyfulness and fertility. The one exception is the plaintive wail in the 137th Psalm:—

> By the streams of Babel, there we sat down,
> And we wept when we remembered Zion.
> On the Willows among the rivers we hung our harps.

And this one record has been sufficient to alter the emblematic character of the Willow—this one incident has made the Willow an emblem of the deepest of sorrows, namely, sorrow for sin found out, and visited with its due punishment. From that time the Willow appears never again to have been associated with feelings of gladness. Even among heathen nations, for what reason we know not, it was a tree of evil omen, and was employed to make the torches carried at funerals. Our own poets made the Willow the symbol of despairing woe" (Johns). This is the more remarkable, because the tree referred to in the Psalms, the Weeping Willow (Salix babylonica), which by its habit of growth is to us so suggestive of crushing sorrow, was quite unknown in Europe till a very recent period. "It grows abundantly on the banks of the Euphrates, and other parts of Asia, as in Palestine, and also in North Africa," but it was only introduced into England during the last century, and then in a curious way. "Many years ago, the well-known poet, Alexander Pope, who resided at Twickenham, received a basket of Figs as a present from Turkey. The basket was made of the supple branches of the Weeping Willow, the very same species under which the captive Jews sat when they wept by the waters of Babylon. The poet valued highly the small and tender twigs associated with so much that was interesting, and he untwisted the basket, and planted one of the branches in the ground. It had some tiny buds upon it, and he hoped he might be able to rear it, as none of this species of Willow was known in England. Happily the Willow is very quick to take root and grow. The little branch soon became a tree, and drooped gracefully over the river, in the same manner that its race had done over the waters of Babylon. From that one branch all the Weeping Willows in England are descended." (Kirby's Trees).

There is probably no tree that contributes so largely to the conveniences of English life as the Willow. Putting aside its uses in the manufacture of gunpowder and cricket bats, we may safely say that the most scantily-furnished house can boast of some article of Willow manufacture in the shape of baskets. British basket-making is, as far as we know, the oldest national manufacture; it is the manufacture of which we have the earliest record of the value placed on British work. British baskets were imported to Rome, and it would almost seem as if baskets were unknown in Rome until they were introduced from Britain—for with the article of import came the name also, and the British "basket" became the Latin "bascauda." We have curious evidence of the high value attached to these baskets. Juvenal describes Catullus in fear of shipwreck throwing overboard his most precious treasures—"precipitare volens etiam pulcherrima," and among these "pulcherrima" he mentions "bascaudas." Martial bears a still higher testimony to the value set on "British baskets," reckoning them among the many rich gifts distributed at the Saturnalia—

Barbara depictis veni bascauda Britannis.
Sed me jam vult dicere Roma suam. *Book* xiv., 99.

Many of the Willows make handsome shrubs for the garden, for besides those that grow into large trees, there are many that are low shrubs, and some so low as to be fairly called carpet plants. Salix Reginæ is one of the most silvery shrubs we have, with very narrow leaves; S. lanata is almost as silvery, but with larger and woolly leaves, and makes a very pretty object when grown on rockwork near water; S. rosmarinifolia is another desirable shrub, and among the lower-growing species, the following will grow well on rockwork, and completely clothe the surface:—S. alpina, S. Grahami, S. retusa, S. serpyllifolia, and S. reticulata. They are all easily cultivated and are quite hardy.

Woodbine (see Honeysuckle).

Wormwood.

(1) *Rosalind.* To weed this Wormwood from your fruitful brain.
Love's Labour's Lost, act v., sc. 2.

(2) *Nurse.* For I had then laid Wormwood to my dug.
. . . .
When it did taste the Wormwood on the nipple
Of my dug, and felt it bitter, pretty fool.
Romeo and Juliet, act i., sc. 3.

(3) *Hamlet.* That's Wormwood.
Hamlet, act iii., sc. 2.

Wormwood is the product of many species of Artemisia, a family consisting of 180 species, of which we have four in England. The whole family is remarkable for the extreme bitterness of all parts of the plant, so that "as bitter as Wormwood" is one of the oldest proverbs. The plant was named Artemisia from Artemis, the Greek name of Diana, and for this reason:—"Verily of these three Worts which we named Artemisias, it is said that Diana should find them, and delivered their powers and leechdom to Chiron the Centaur, who first from these Worts set forth a leechdom, and he named these Worts from the name of Diana, Artemis, that is, Artemisias" ("Herbarium Apulæi"—Cockayne's translation). The Wormwood was of very high reputation in medicine, and is thus recommended in the Stockholm MS.:—

Lif man or woman, more or lesse
In his head have gret sicknesse
Or gruiance or any werking
Awoyne he take wt. owte lettyng
It is called Sowthernwode also
And hony eteys et spurge stamp yer to
And late hy yis drunk, fastined drinky
And his hed werk away schall synkyn.

But even in Shakespeare's time this high character had somewhat abated, though it was still used for all medicines in which a strong bitter was recommended. But its chief use seems to have been as a protection against insects of all kinds, who might very reasonably be supposed to avoid such a bitter food. This is Tusser's advice about the plant—

While Wormwood hath seed get a handful or twain
To save against March, to make flea to refrain;
Where chamber is sweeped and Wormwood is shown,
No flea, for his life, dare abide to be known.
What savour is better, if physic be true,
For places infected than Wormwood or Rue?
It is as a comfort for heart and the brain,
And therefore to have it, it is not in vain.
July's Husbandry.

This quality was the origin of the names Mugwort and Wormwood. Its other name (in the Stockholm MS. above), Avoyne or Averoyne is a corruption of the specific name of one of the species, A. Abrotanum. Southernwood is the southern Wormwood, *i.e.*, the foreign, as distinguished from the native plant. The modern name for the same species is Boy's Love, or Old Man. The last name may have come from its hoary leaves, though other explanations are given: the other name is given to it, according to Dr. Prior, "for an ointment made with its ashes being used by young men to promote the growth of a beard." There is good authority for this derivation, but I think the name may have been given for other reasons. "Boy's Love" is one of the most favourite cottage garden plants, and it enters largely into the rustic language of flowers. No posy presented by a young man to his lass is complete without Boy's Love; and it is an emblem of fidelity, at least it was so once. So Sir Francis de Sales applied it—"To love in the midst of sweets, little children could do that; but to love in the bitterness of Wormwood is a sure sign of our affectionate fidelity."

In England Wormwood has almost fallen into complete disuse; but in France it is largely used in the shape of Absinthe. As a garden plant, Tarragon, which is a species of Wormwood, will claim a place in every herb garden, and there are a few, such as A. sericea, A. cana, and A. alpina, which make pretty shrubs for the rockwork.

Yew.

(1) *Song.* My shroud of white, stuck all with Yew,
Oh! prepare it.
Twelfth Night, act ii., sc. 4.

(2) *3rd Witch.* Gall of goat, and slips of Yew,
Slivered in the moon's eclipse.
Macbeth, act iv., sc. 1.

(3) *Scroop.* Thy very beadsmen learn to bend their bows
Of double-fatal Yew against thy state.
Richard II., act iii., sc. 2.

(4) *Tamora.* But straight they told me they would bind me here
Unto the body of a dismal Yew.
Titus Andronicus, act ii., sc. 3.

(5) *Paris.* Under yon Yew trees lay thee all along,
Holding thine ear close to the hollow ground;
So shall no foot upon the churchyard tread
(Being loose, unfirm, with digging up of graves)
But thou shalt hear it.
Romeo and Juliet, act v, sc. 3.

(6) *Balthasar.* As I did sleep under this Yew tree here,
I dreamt my master and another fought,
And that my master slew him. *Ibid.*

The Yew, though undoubtedly an indigenous British plant, has not a British name. The name is derived from the Latin Iva, and "under this name we find the *Yew* so inextricably mixed up with the *Ivy* that, as dissimilar as are the two trees, there can be no doubt that these names are in their origin identical." So says Dr. Prior, and he proceeds to give a long and very interesting account of the origin of the name. The connection of Yew with *iva* and *Ivy* is still shown in the French *if*, the German *eibe*, and the Portuguese *iva*. *Yew* seems to be quite a modern form; in the old vocabularies the word is variously spelt iw, ewe, eugh-tre, haw-tre, new-tre, ew, and iw.

The connection of the Yew with churchyards and funerals is noticed by Shakespeare in Nos. 1, 5, and 6, and its celebrated connection with English bow-making in No. 3, where "doubly-fatal" may probably refer to its noxious qualities when living and its use for deadly weapons afterwards. These noxious qualities, joined to its dismal colour, and to its constant use in churchyards, caused it to enter into the supposed charms and incantations of the quacks of the Middle Ages. Yet Gerarde entirely denies its noxious qualities:—"They say that the fruit thereof being eaten is not onely dangerous and deadly unto man, but if birds do eat thereof it causeth them to cast their feathers and many times to die—all which I dare boldly affirme is altogether untrue; for when I was yong and went to schoole, divers of my schoolefellowes, and likewise my selfe, did eat our fils of the berries of this tree, and have not only slept under the shadow thereof, but among the branches also, without any hurt at all, and that not at one time but many times." There is no doubt that the Yew berries are quite harmless, and I find them forming an element in an Anglo-Saxon recipe, which may be worth quoting as an example of the medicines to which our forefathers submitted. It is given in a leech book of the tenth century or earlier, and is thus translated by Cockayne:—"If a man is in the water elf disease, then are the nails of his hand livid, and the eyes tearful, and he will look downwards. Give him this for a leechdom: Everthroat, cassuck, the netherward part of fane, a yew berry, lupin, helenium, a head of marsh mallow, fen mint, dill, lily, attorlothe, pulegium, marrubium, dock, elder, fel terræ, wormwood, strawbery leaves, consolida; pour them over with ale, add holy water, sing this charm over them thrice (here follows some long charms which I need not extract); these charms a man may sing over a wound" (Leech Book, iii., 63).

I need say little of the uses of the Yew wood in furniture, nor of the many grand specimens which are scattered throughout the churchyards of England, except to say that "the origin of planting Yew trees in churchyards is still a subject of considerable perplexity. As the Yew was of such great importance in war and field sports before the use of gunpowder was known, perhaps the parsons of parishes were required to see that the churchyard was capable of supplying bows to the males of each parish of proper age; but in this case we should scarcely have been left without some evidence on the matter. Others again state that the trees in question were intended solely to furnish branches for use on Palm Sunday, while many suppose that the Yew was naturally selected for planting around churches on account of its emblematic character, as expressive of the solemnity of death, while, from its perennial verdure and long duration, it might be regarded as a pattern of immortality" ("Penny Magazine," 1843).

A good list of the largest and oldest Yews in England will be found in Loudon's "Arboretum."

The following was omitted in its proper place:—

Pinks.

> *Romeo.* A most courteous exposition.
> *Mercutio.* Nay, I am the very Pink of courtesy.
> *Romeo.* Pink for flower.
> *Mercutio.* Right.
> *Romeo.* Why, then is my pump well flowered.
> *Romeo and Juliet*, act ii., sc. 4.

The Pink or Pincke was, as now, the name of the smaller sorts of Carnations, and was generally applied to the single sorts. It must have been a very favourite flower, as we may gather from the phrase "Pink of courtesy," which means courtesy carried to its highest point; and from Spenser's pretty comparison—

> Her lovely eyes like Pincks but newly spred.
> "Amoretti"—*Sonnet* 64.

The name has a curious history. It is not, as most of us would suppose, derived from the colour, but the colour gets its name from the plant. The name (according to Dr. Prior) comes through *Pinksten* (German), from Pentecost, and so was originally applied to one species—the Whitsuntide Gilliflower. From this it was applied to other species of the same family. It is certainly "a curious accident," as Dr. Prior observes, "that a word that originally meant 'fiftieth' should come to be successively the name of a festival of the Church, of a flower, of an ornament in muslin called *pinking*, of a colour, and of a sword-stab." Shakespeare uses the word in three of its senses. First, as applied to a colour—

> Come, thou monarch of the Vine,
> Plumpy Bacchus with Pink eyne.
> *Antony and Cleopatra*, act ii., sc. 7.

Second, as applied to dress in Romeo's person—

> Then is my pump well flowered.
> *Romeo and Juliet*, act ii., sc. 4.

i.e., well pinked. And thirdly—

> There's a haberdasher's wife of small wit near him, that railed upon me till her Pink'd porringer fell off her head.
> *Henry VIII.*, act v., sc. 3.

And as applied to the flower in the passage quoted above. He also uses it in another sense—

> This Pink is one of Cupid's carriers;
> Clap on more sail—pursue!
> *Merry Wives of Windsor*, act ii., sc. 7.

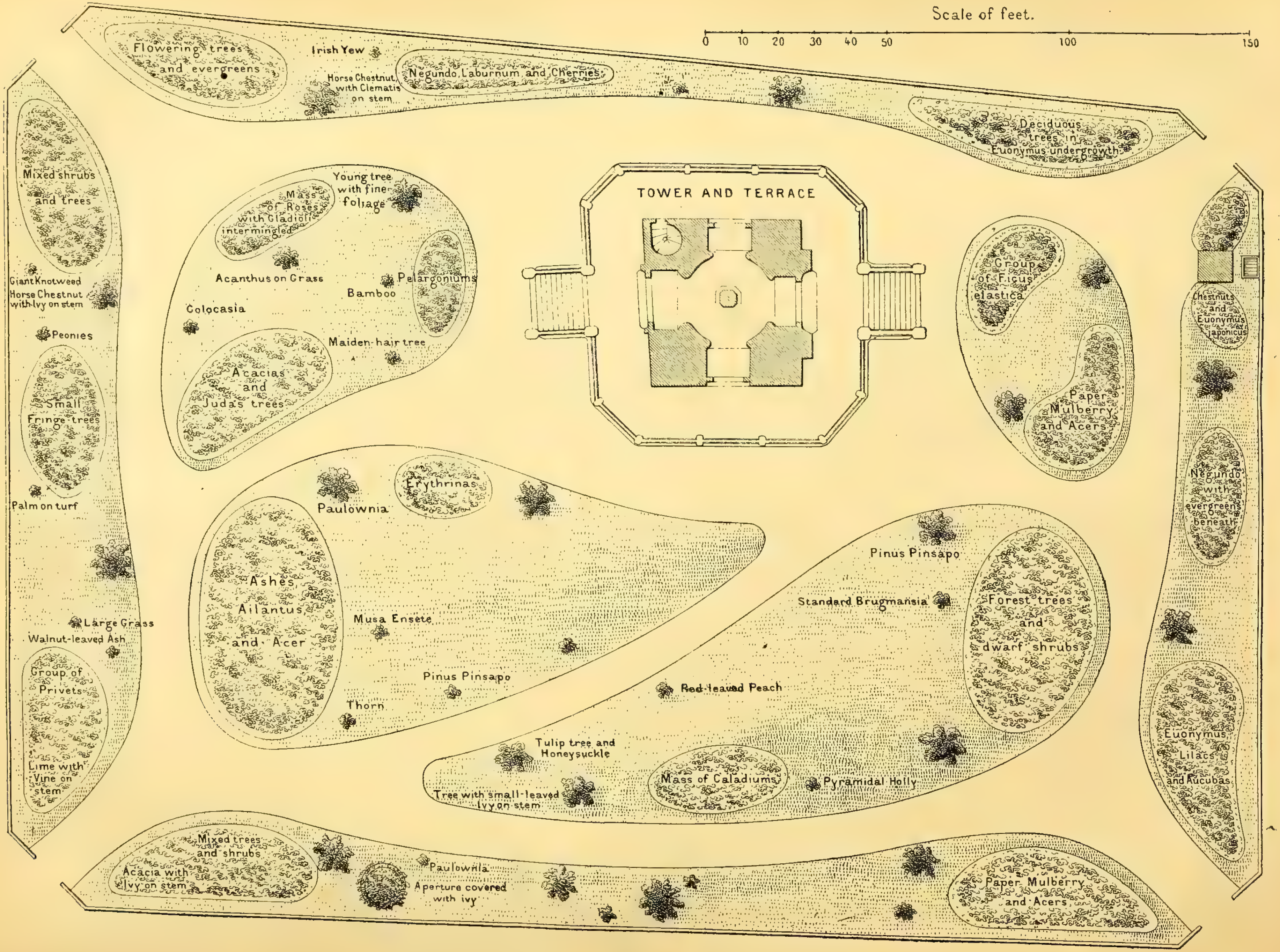
where Pink means a small country vessel often mentioned under that name by writers of that date.

"The Dismal Yew" concludes the list of Shakespeare's plants and the first part of my proposed subject, and while I hope that those readers of The Garden who may have gone with me so far have met with some things to interest them, I think they will also agree with me that gardening and the love of flowers is not altogether the modern accomplishment that many of our gardeners now fancy it to be. Here are more than 180 names of plants in one writer, and that writer not at all writing on horticulture, but only mentioning plants and flowers in the most incidental manner as they happened naturally to fall in his way. I should doubt if there be any similar instance in any modern English writer, and feel very sure that there is no such instance in any modern English dramatist. It shows how familiar gardens and flowers were to Shakespeare, and that he must have had frequent opportunities for observing his favourites (for most surely he was fond of flowers), not only in their wild and native homes, but in the gardens of farmhouses and parsonages, country houses, and noblemen's stately pleasaunces. The quotations that I have been able to make from the early writers in the ninth and tenth centuries down to gossiping old Gerarde, the learned Lord Chancellor Bacon, and that excellent old gardener Parkinson, all show the same thing, that the love of flowers is no new thing in England, still less a foreign fashion, but that it is innate in us, a real instinct, that showed itself as strongly in our forefathers as in ourselves; and while we can show that such men as Shakespeare and Lord Bacon (to mention no others) were almost proud to show their knowledge of plants and love of flowers, we can say that such love and knowledge is thoroughly manly and English.

In the inquiry into Shakespeare's plants I have entered somewhat largely into the etymological history of the names. I have been tempted into this by the personal interest I feel in the history of plant names, and I hope it may not have been uninteresting to my readers; but I do not think this part of the subject could have been passed by, for I agree with Johnstone—"That there is more interest and as much utility in settling the nomenclature of our pastoral bards as that of old herbalists and dry-as-dust botanists" ("Botany of the Eastern Border.") I have also at times entered into the botany and physiology of the plants; this may have seemed needless to some, but I have thought that such notices were often necessary to the right understanding of the plants named, and again I shelter myself under the authority of a favourite old author—"Consider (gentle readers) what shiftes he shall be put unto, and how rawe he must needs be in the explanation of metaphors, resemblances, and comparisons, that is ignorant of the nature of herbs and plants from whence their similitudes be taken, for the inlightening and garnishing of sentences" (Newton's "Herball for the Bible.")

I have said that my subject naturally divides itself into two parts, first, the plants and flowers named by Shakespeare; second, his knowledge of gardens and gardening. The first part is now concluded, and I go to the second part, which will be very much shorter, and which may be better entitled "The Garden-craft of Shakespeare." H. N. Ellacombe.

Landscape Gardening.—The accompanying plan is one that has been specially taken for us, showing the disposition of the garden round the Tour St. Jacques, planted as it is during the present year. For a town garden it has considerable merit, mainly in the bold variety of its contents, which remove it at once from the too-numerous gardens with a few common trees and a few common flowers only. It has also some faults, which might be easily avoided in similar cases. The masses or beds of flowers are sometimes too large, though they are, as they ought always to be, simple in outline. The walks are too numerous; a bold walk around and one round the tower would have sufficed for all needs, and allowed much more space, affording fuller opportunities for a more favourable disposition of the ground. The walk that passes by the Red-leaved Peach and cuts a long plot in two is particularly objectionable, and quite needless. The details of the planting are printed in the plan.



GARDEN ROUND TOUR ST. JACQUES, AS PLANTED THIS SEASON.

THE KITCHEN GARDEN.

NOTES ON THE POTATO CROP OF 1876.

The following Table shows the results of twenty varieties of Potatoes, grown in a good soil—sandy loam—at Marnham, East Notts, in 1876, and may be of some use for comparison with the crop now being lifted (of which, I fear, a woful account will have to be given). The Table is further intended to show the effect of change of seed, in the case of Nos. 9, 10, 11, 12, and 17, and with Nos. 6, 7, 8, and 11, the result of wider and nearer distances in planting. Nos. 1, 2, 3, 7, 8, 14, 15, 16, 18, and 19, and all marked (*a*) were grown from my own seed, carefully picked, thoroughly ripened, and very even; those marked (*b*) were from seed grown in a neighbouring garden (a light soil but very inferior to my own), from seed supplied by me in 1875; Late Rose (*c*) was from a friend's garden (from seed I had given him in 1875), a good, strong loam, but where the Potatoes are frequently heavily hit with disease; Nos. 4, 5, 6, 13, and 20, were altogether new seed. None of the varieties had been grown in this garden for more than four years without a change of seed. The early varieties were planted 6 in. deep (Nos. 1, 4, and 9), the rest 7 in. deep, and none were earthed up at all. The ground was scarcely manured with anything after the previous crops; what was used was chiefly the ash from a slowly-burnt garden fire. The disease, as the Table shows, was merely nominal, and I attribute this to a great extent to the absence of anything like fresh or strongly stimulating manure, which, though undoubtedly increasing the yield, renders the crop much more liable to the disease as well as, in my opinion, tending greatly to weaken the constitution of the Potato. The season was by no means a very favourable one—dry and hot to nearly the end of August, then unduly wet the rest of the season, especially the end of September and beginning of October. This caused much disease in the neighbourhood generally, and with all late Potatoes, excessive supertuberation. I had a few late sorts which produced heavy crops, but so spoiled by supertuberation, that I could take no account of the yield. Among these also there was more disease, but still not to any extent; but experience seems very plainly to prove that it pays best to grow such varieties as mature early, by the end of August or beginning of September, especially as there are now several heavy cropping sorts, though not equal in all respects to some of our old late Potatoes. With such springs as we now so often have, it seems impossible to secure the advantages that we used to think were gained by early planting. All Potatoes that were above ground as late as even the middle of May, were this year very seriously injured, at least in this district. With regard to change of seed, all will agree it is a good plan to have fresh seed as often as possible, provided it can be obtained of as good quality as the home-grown, and I have not found this as easy as it ought to be. In connection with this point I think the system of encouraging (with new varieties especially) unnatural production by the offer of prizes for the highest yield from a given quantity of seed, as bad a plan as could well be devised. The conditions of growth all tend to the weakening of the Potato, and the result is seed of a very poor quality. I can only attribute to this cause the comparative failure of Compton's Surprise and Brownell's Beauty (Nos. 5 and 13 in the Table) which I grew for the first time last year from newly imported seed. They were planted on a carefully prepared and fresh piece of ground, on which no Potatoes had been grown since 1872, and the crop was very poor in quantity and indifferent in quality, yielding less than eight-fold, while Late Rose (*c*) from seed which had only had one year's change from my own ground, yielded over twenty-fold. It will be seen by the Table that in the case of No. 9 the yield was slightly in favour of my own seed, but as I have already remarked, the soil on which all the seed marked (*b*) was grown is very inferior to my own, and in this case the seed was not as well sprouted. With regard to the distance apart of rows and sets the advantage of giving plenty of room is very marked, especially in the case of Nos. 7, 8, and 11 (*c*) and (*b*), and when the rows are 4 ft. apart, the ground is not all occupied by Potatoes, a row of Greens be set between each row of Potatoes, and they, too, give a proportionately heavy return for the abundance of room in which they revel. I have tried giving more space still, but have come to the conclusion that the above is about the happy medium. E. C.

No.	Varieties.	Seed.				Crop.		
		Wgt. in lbs.	No. of sets.	Dist. apart. Rows ft. in	Dist. apart. Sets ft. in.	When lifted.	Wgt. in lbs Good.	Wgt. in lbs Disd.
1	Racehorse	3½	36	2 0	0 9	July	32¼	—
2	Ashleaf Kidney ...	,,	36	,,	,,	,,	41	—
3	Bresee's King of the Earlies	,,	30	,,	0 10	,,	37¾	—
4	Mona's Pride	,,	44	,,	,,	,,	37¾	—
5	Compton's Surprise	..	28	2 6	1 0	Aug.	24	—
6	Snowflake	2⅛	24	,,	,,	,,	32¾	—
	,, ...	1⅛	12	4 0	1 3	,,	18¼	—
7	Early Vermont	3½	22	,,	,,	,,	57¾	—
	,, ...	,,	22	2 6	1 0	,,	36¼	—
8	Climax	,,	21	4 0	1 3	,,	50¼	—
	,, ...	3	22	2 6	1 0	,,	27¾	—
9	Myatt's Ashleaf (*a*)... ...	1¾	15	,,	0 10	,,	12¼	—
	,, (*b*)... ...	,,	15	,,	,,	,,	11	—
10	Early Rose (*a*)	3½	26	,,	1 0	,,	35½	—
	,, (*b*)	,,	26	,,	,,	,,	48	—
11	Late Rose (*a*)...	,,	18	4 0	1 3	,,	43¾	—
	,, (*c*)...	,,	22	,,	,,	,,	70½	—
	,, (*a*)...	,,	23	2 6	1 0	,,	35	—
	,, (*b*)...	,,	26	,,	,,	,,	33	—
12	Bresee's Prolific (*a*)... ...	1¾	12	,,	,,	Sept.	10¼	—
	,, (*b*)... ...	..	12	,,	,,	,,	11½	—
13	Brownell's Beauty	3½	24	,,	,,	,,	27	—
14	King of Potatoes	6	46	,,	,,	Oct.	38	—
15	Waterloo Kidney	7	51	,,	,,	,,	44	¼
16	White Don	3½	26	,,	,,	,,	36	—
17	Oxfordshire Kidney (*a*) ...	10½	76	,,	,,	,,	87½	3½
	,, (*b*) ...	3½	36	,,	,,	,,	49	½
18	Model	,,	25	,,	,,	,,	28½	1
19	Lapstone	2	15	,,	,,	,,	14½	—
20	Hundredfold Fluke	4	32	,,	,,	14th	36½	—

Over-ripe Seed Potatoes.—The term "over-ripe," as applied to seed Potatoes, is wholly a mistake, for no seed tuber will germinate and produce a plant until it is thoroughly ripe—that is, the germinating organs perfectly matured; and this maturity only results from long keeping. When a tuber is fit and starts its eyes into growth it is ripe as a seed tuber, and not before. Over-ripe tubers must, like over-ripe Apples, be rotten, or tending to that stage. It is equally absurd to assert that seed Potatoes, lifted before the haulm has decayed or ripened, are better for seed than are those that have remained longer in the ground; the strongest Potato plants invariably come from sets that have never been lifted, but have remained in the ground the entire winter. The danger that follows upon lifting Potatoes for seed too early is, that the sooner they are lifted the sooner do they start their eye-buds; and this is an undoubted evil, as it should at all times be the aim of the cultivator to keep them in check. The best check upon this form of precocity is to allow the tubers to remain in the cool soil as long as can be consistent with safety and convenience, and then the eyes will remain much longer dormant. There is a common form of belief that if tubers after the haulm is dead be allowed to remain in the soil, they are much more liable to be affected by disease: I hold this to be a simple error, and not supported by facts. When the haulm is struck the tubers are affected more or less almost simultaneously, and even if got up at once, the affected ones will rot as badly in the store as in the ground, whilst those that are sound in either case will remain so.—A. D.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Origin of the Jerusalem Artichoke.—I am not wise enough to decide who *invented* the Jerusalem Artichoke, but this I can vouch for, that they are found growing wild and in abundance on the banks of streams in this section, where none have ever been planted, where the virgin soil has never been touched by plough or any implement. They were here when the first white settlers arrived.—J. M. Miller, *Peabody, Marion Co., Kansas*, in "The Rural New Yorker."

Herbs.—There is a lamentable ignorance of the use of herbs in American and English cookery. A writer in the current "Quarterly Review" says:—"The fact is, French cooks and French gardeners know what herbs for cooking are. A friend of ours happened to be in a country house the other day where there there was much show, little science, and a large garden kept up at a great expense. At luncheon he volunteered to make a fresh salad, and forthwith proceeded to the garden to gather his materials. He asked for Lettuce, Chervil, Tarragon, and Borage: he only found the first. It is to the judicious use of herbs that French cookery owes half its merit."

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

September 10.—Sowing Red and White Turnip Radishes. Shifting a few Cinerarias and Primulas into pots for blooming early. Putting in cuttings of double Petunias, Lobelias, and Nierembergias. Cutting and bottling a few bunches of Black Hamburgh Grapes left from the second early house, and removing the lights off the same, in order to get the wood well ripened. Cutting off all heads of Globe Artichokes that are overgrown. Removing all young shoots from Tomatoes, in order to expose the unripened fruit to the sun, and gathering those that are ripe; also removing laterals from Vines, and cutting out bad berries from the bunches. Making new gravel walks and turning old ones. Watering newly-planted Endive, Lettuce, and Cabbage.

Sept. 11.—Potting Pelargoniums which have been struck in the open ground. Clearing off Strawberry runners from permanent plants, applying a good coating of rotten manure between the rows and forking it in. Dutch hoeing amongst Broccoli and all other growing crops, to kill weeds before wet weather sets in. Planting all spare ground with Cabbage plants to come into use in winter. Gathering Louise Bonne of Jersey, Jersey Gratioli, and a few Marie Louise Pears for dessert; also Victoria Plums from a north wall for preserving. Watering the Pines, late-planted Celery, Scarlet Runner Beans, and late Peas.

Sept. 12.—Potting a collection of Campanulas. Covering up dwarf Beans with spare lights to protect them from early frosts and heavy rains. Roughly digging and heavily manuring a piece of ground lately cleared of Peas for next year's Onions. Earthing up Celery and Cardoons. Pruning and painting the early Black Hamburgh Vines and washing the woodwork and glass. Emptying old Mushroom-bed and turning manure for another one. Pinching off all runners from Strawberries in pots. Weeding and hoeing amongst Asparagus-beds.

Sept. 13.—Pricking out Black-seeded Brown Cos and Stanstead Park Lettuce. Thinning out Spinach and afterwards hoeing between the rows. Cutting Grass edgings and turning gravel walks to give them a fresh appearance for the winter. Cutting off Strawberry runners and weeding and hoeing between the plants. Earthing up Celery whilst the soil is dry and friable. Spawning and soiling Mushroom bed. Watering the Pines all through, also Lettuce and Cauliflower plants.

Sept. 14.—Potting off cuttings of Coleus and Alternantheras. Putting in cuttings of Heliotropes and Pelargoniums. Digging ground for August-sown Cabbage. Clearing off Peas and cleaning the ground for other crops. Thinning Turnips. Cleaning, weeding, and rolling gravel walks. Stopping all laterals on Vines. Placing stakes to Pines which are in fruit. Tying out Chrysanthemums. Gathering Yellow Ingestre, Cox's Orange Pippin, and Emperor Alexander Apples; also a few more Marie Louise Pears and Tomatoes. Watering indoor Peach borders.

Sept. 15.—Sowing Chervil. Thinning out Mignonette in pots; also Lettuce and Endive in seed beds. Dutch hoeing between all Cauliflowers, Cabbages, and newly-planted Lettuce and Endive. Looking over all Cucumbers and Melons, and stopping their shoots where required. Renovating manure linings round frames. Filling up Grape bottles and cutting out all bad berries from the bunches. Fruit in use for dessert:—Pines, Grapes, Melons, Peaches, Figs, Nectarines, Pears, Apples, and Plums.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Large-flowered Pelargoniums, cut down late, will have now made enough growth to be shaken out and re-potted; treat them similarly to the earlier plants by cutting away a portion of the roots and putting them into 6-in. pots, as it will be better to move them into others an inch or two larger later on than to place them at once in those in which they are to bloom. Insert them in a pit or frame where they can be kept comparatively close for a fortnight, during which time syringe overhead, but do not give them much water at the roots.

Lilies.—The different varieties of L. speciosum that flowered late should be supplied with water so long as the foliage keeps green. L. auratum and other species, the tops of which are dead, should have just enough water to keep the soil in a slightly moist state.

Calceolarias and Cinerarias, &c.—See that all soft-wooded plants, such as Calceolarias, Cinerarias, and Primulas, that are in pits and frames, are free from aphides; if any be affected with this pest, they should be now repeatedly fumigated or dipped in Tobacco water, so as to have them clean previously to getting them into their winter quarters. Herbaceous Calceolarias, sown about the end of July, will shortly be ready for pricking out; as soon as they are of a sufficient size to handle they should be put in large pans thoroughly drained and filled with loam, to which has been added a good portion of rotten manure and sifted leaf-soil in equal parts, and sand enough to form with the whole a light, open compost. Insert the plants 1½ in. apart, and range them on a moist surface, such as a broad shelf or flat stage, covered with coal ashes or sand; they must not be too far from the glass, or they will get drawn up weakly through the winter. If possible during the winter they should be in a temperature of from 40° to 45°, as they ought to keep on growing. As soon as they have made leaves 1 in. long, let them be transferred singly into 3-in. pots.

Primulas sown for late flowering in spring should now be moved into the pots in which they are to bloom. Give them a rich, porous soil, and encourage them to grow freely whilst there is yet a considerable amount of daylight, keeping them close to the glass in the pit or house they occupy.

Late Vineries.—There has seldom been a season, especially in the north of the kingdom, when Vines that were not assisted in the spring with any fire-heat have been so backward as they are this year; this not alone applies to the ripening of the fruit, but what for another year is of much greater importance—the ripening of the wood, which in many places with late Vines is far from being in a satisfactory state. In houses furnished with heating apparatus, the maturing process can yet be effected, but no time should be lost, as anything to be done in this way must be accomplished whilst the leaves are green and in a condition to perform their functions. Whether the medium for heating be flues or hot-water pipes, I should recommend fires at once being lit, and kept going moderately night and day until the wood is thoroughly brown and hard, with air on during the day more or less proportionate to the state of the weather, and a little on continuously through the night. In houses not provided with heating medium, even in the southern parts of the country, the unripened state of the wood is such as not to give assurance of a crop next year, as in many places I have noticed that where the fruit is colouring, the wood and buds at the base of the leaves have not attained that hard brown colour so desirable in the Vine, even before the fruit is ripe. In houses of this description nothing can be done except to use every available ray of sun-heat, admitting a little air in the mornings as soon as the sun comes upon the glass, increasing it more or less according to the sun-heat during the day, but closing the house still earlier in the afternoons than has previously been recommended, in order to keep the house as long as possible up to 80° or 90°; should the thermometer indicate even more than this for some time after closing, it will be all the better. Keep the atmosphere as dry as possible, using no more water than is necessary for such few plants as cannot be conveniently moved from the house. A little air during the night whilst the Grapes are ripening is an important element in giving colour, but in this exceptional season in houses of the description under consideration, where the maturation of the wood is so far from completion, I should recommend that no air be given after the house is shut up in the afternoon, as it will be much better to sacrifice something in the colour of the fruit than to run the chance of a small crop next year, for by thus keeping the house closed through the night, the temperature will necessarily be considerably higher, warmth being now the principal element in ripening the wood. I frequently meet amateurs, even such as have attained some experience in gardening matters, who entertain very mistaken ideas as to the ripening of Vines, supposing that abundance of air without warmth will effect the process; yet this is a great mistake, as the latter is the most potent and indispensable agent.

Peaches.—Continue to give plenty of air to Peaches that have been forced, and also to such as are grown under glass without artificial heat. Now that the fruit is gathered the leaves may have a good washing with the garden engine to free the foliage from any insects, as even with these late Peaches it is essential to keep the leaves in a healthy condition as long as possible. Where there are inside borders these will necessarily have got dry through withholding water from the time the crop began to ripen; a good soaking should now be given, as, although no leaf growth is going on, should the roots be too dry, the buds for next year's crop will not attain the requisite plump condition before the leaves fall.

Shrubberies.—Where any evergreen shrubs have to be moved, either through becoming overcrowded, or where additions have to be made, not a day should be lost in carrying out the work. The nature of the soil will considerably influence the mode of procedure with any plants that have attained a large size; in strong, adhesive soils that will hold together, so that they can be moved with good balls, these should be kept intact as big as the means for moving them will allow, and the roots beyond such balls ought to have the soil from around them carefully removed so as to secure as great a length as possible, for upon the amount of the smaller fibres that can be retained will in a great measure depend the progress the shrubs will make for a season or two after removal. In all cases where large plants of this description have to be moved the holes in which they are placed must be made wide enough not only to admit the ball, but also to allow the roots that extend beyond it to be laid out straight, and not twisted round in the unnatural position often done by careless planters. As the soil is being filled in, the roots must be well drenched with water; if this be given now in sufficient quantities no more will be required, as they will at once commence to grow. In light ground it generally happens that very little soil will adhere to the roots, in which case it is still more imperative that as great a length of root as possible be secured. Shrubs that have attained any size and have to be removed in such soil as this will require more support to them from the winds after re-planting than those that can be moved with a good ball. In the case of smaller plants that are to be shifted, proceed as recommended for the larger ones; with these, as with the others, the more roots that are retained with the least mutilation, the less check they will receive.

Cabbages sown about the end of July for the ensuing spring crop will be now quite large enough to plant. The ground for these should be well dug, selecting if possible a piece that has been liberally enriched for the preceding crop, in which case no manure will be required; in planting give more or less room according to the variety, the smaller-growing kinds will do if the rows be 18 in. apart, and the plants be placed about half this distance asunder in the rows; this arrangement will allow for cutting every other out in the spring as soon as they are fit for use. This should be done before they have attained nearly the size of the remaining portion of the crop. Stronger-growing varieties should be allowed 2 ft. betwixt the rows; but the distance from plant to plant in the rows recommended for the smaller growers will be sufficient for these.

Onions.—There is no spring-sown vegetable that I have noticed which has been so much affected by the late season as Onions; these, even in the south of the kingdom, are so fresh and green, and increasing so fast in size, that they appear as if they would keep on growing almost to the end of the month. To ensure their keeping, it is necessary to allow them to remain until they are fully matured; but they must not be permitted to stand too long, or they will commence rooting afresh, which seriously injures them.

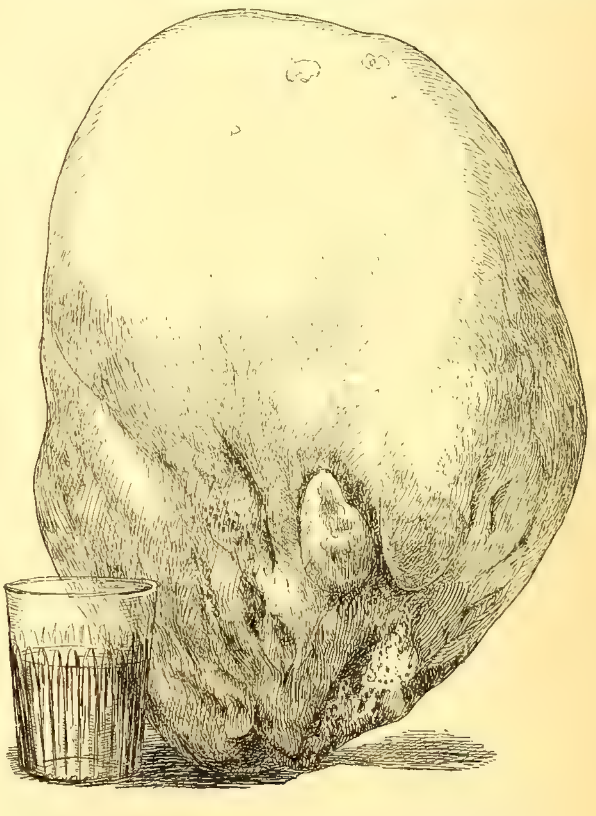
Salading.—A little American Cress and Corn Salad should now be sown. These seeds thrive the best when put thinly in rows 10 in. or 12 in. apart; they will come in for use in the spring, and are very handy in case of a failure in Lettuce. Where salad is continuously in demand, a little more Black-seeded Cos Lettuce and Green-curled Endive for wintering in frames should be sown; these also will come in for use in the spring.

Thinning Parsley.—It is a good plan to leave Parsley to prove itself before finally thinning it out; then all the infirm and less curled varieties should be thinned out, and only the best retained. Some prefer to sow Parsley broadcast in a seed-bed, and transplant it into rows afterwards; they contend that not only will the strain be truer to character, but that it will come better owing to being transplanted. There may be something in this, but so also is there in the assertion of those who disapprove of transplanting, viz., that it causes the Parsley to run sooner to seed; for this reason those who wish to save seeds of rather good strains of Parsley should transplant the stock intended for seed. The soil best suited for Parsley is a light sandy loam on a rather dry bottom, enriched with a liberal dressing of farmyard manure, charred refuse, burnt earth, and soot. All might be applied if available, and if not, one or more of the stimulants named. Charred refuse, rough wood-ashes, and soot suit Parsley admirably. The leaves and stems run up with extraordinary vigour, and curl with a prodigality of verdure and size in such a mixture as to render Parsley as unlike as anything well could be to the common Parsley seen in ordinary kitchen gardens. A loose surface is also favourable to its free growth.—F.

Radishes for Autumn and Winter Use.—The Black Spanish, the Chinese Rose, and the large White Californian, may be sown now, in addition to the French Breakfast, in rich, light soil. Before frost comes they should either be taken up and stored in sand, or the bed should be covered with dry leaves or evergreen branches. If left in the beds snails will spoil a good many of them unless sharply looked after; frequently dusting them with dry wood ashes will stop their depredations and be useful in other ways. The large Californian Radish, when better known, will make a very useful addition to winter and early spring salads sliced up with Beetroot, &c.—E. Hobday.

A GIGANTIC PUFFBALL.

The annexed example of a gigantic Puffball was found in a garden on the top of the sand cliffs of the ballast quarries at Erith. It appeared amongst some Currant bushes, where manure had been dug in freely for Vegetable Marrows. The speed with which it grew is as remarkable as its size, attaining as it did in five days a circumference of 3 ft. 1 in. It measured $1\frac{1}{2}$ ft. high, and weighed 8 lb., and it was still on the increase when pulled up, having grown 1 in. in girth during the previous night. Its skin was bright and smooth, like that of a white Mushroom, but drier. It was attacked by slugs, which were, however, kept off it by means of a circle of lime placed round it as soon as the depredations were perceived. In the same garden there was also another specimen of this fungus, but it did not grow to any great size, its growth being probably stopped through depredations committed by slugs. A. Dawson.



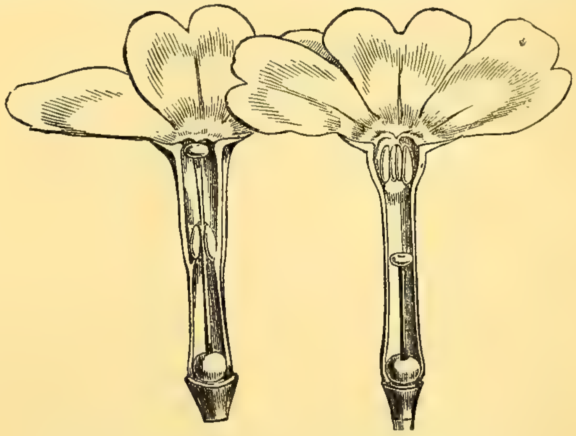
The Rain Tree.—The Consul of the United States of Columbia in the Department of Loreto (Peru) has written from Yurimaguas to President Prado, informing him that in the woods adjacent to the city of Moyobamba exists a tree called by the natives Tamia-caspi (Rain tree), which possesses some remarkable qualities. It is a tree about 50 ft. high when at maturity, and of about 3 ft. in diameter at the base, and has the property of absorbing an immense quantity of humidity from the atmosphere, which it concentrates and subsequently pours forth from its leaves and branches in a shower, and in such abundance that in many cases the ground in its neighbourhood is converted into a perfect bog. It possesses this curious property in its greatest degree in the summer, precisely when the rivers are at their lowest, and water most scarce; and the writer proposes that it should be planted in the more arid regions of Peru, for the benefit of agriculturists.

THE LIBRARY.

THE FORMS OF FLOWERS*

We have before us the latest addition which Mr. Darwin has made to his already voluminous publications. From the year 1831, when, at the age of twenty-two, he started with Capt. Fitzroy as naturalist to the voyage of the Beagle for the survey of South America and the circumnavigation of the globe—a voyage which is commemorated in the popular Berberis Darwini, a plant which was first introduced to our gardens as a result of this expedition, and which was named by Sir William Hooker in honour of its discoverer—up to the present time Mr. Darwin has been ceaselessly employed, not only in evolving and strengthening the theory with which his name is popularly associated, but in collecting and observing facts, and in publishing the result of his investigations. It is not only the evolutionist who can derive both pleasure and profit from the perusal of Mr. Darwin's works; they appeal to naturalists of every class and kind, and those who differ most from his theories are the first to admire the patience and perseverance which have been displayed in the accumulation of the facts upon which these theories are based. It is difficult to estimate the amount of routine work which our great naturalist has patiently gone through in pursuit of knowledge; in the volume now before us, he casually remarks that to ascertain one fact alone, he was "compelled to count under the microscope above 20,000 seeds of Lythrum Salicaria (the Purple Loosestrife), and from this we can form some idea of his energy and perseverance. The various points connected with cross-fertilisation in the vegetable kingdom were fully reviewed and considered in one of Mr. Darwin's recent volumes, which was duly noticed in these pages. On the present occasion he treats of the differently formed flowers normally produced by certain species of plants, either upon the same individuals or upon different individuals of the same species; and these differences have, as we shall endeavour to show, practical bearings which concern horticulturists quite as much as botanists.

"Florists who cultivate the Polyanthus and Auricula have long been aware," says Mr. Darwin, "of the two kinds of flowers [*i.e.*, those with long stamens and a short style, and those with short stamens and a long style], and they call the plants which display the globular stigma at the mouth of the corolla 'pin-headed' or 'pin-eyed,' and those which display the anthers 'thrum-eyed.'" These two forms he calls respectively the long-styled and the short-styled; and he proceeds to demonstrate that instead of affording a mere instance of variability, as had been supposed, the welfare of the species depends in a great measure upon the existence of these two forms, which usually occur together in about equal quantity. By numerous and careful experiments in the fertilisation of Primroses and Cowslips which had been protected from the visits of insects, the natural agents by means of which cross-fertilisation is insured, Mr. Darwin shows most distinctly "that the long-styled flowers fertilised with pollen from the short-styled yield more capsules, especially good ones [*i.e.*, containing more than one or two seeds], and that these capsules contain a greater proportional weight of seeds than do the flowers of the long-styled when fertilised with pollen from a distinct plant of the same form;" and that the same is the case with the short-styled flowers if fertilised with pollen from the long-styled form, and so clearly is this established, that the term ' legitimate union " is applied to the former method of fertilisation, while the union of two long-styled or two short-styled forms is styled "illegitimate." It needs no demonstration to show that these facts, which rest on unquestionable evidence, have a very important aspect for growers, not only of Primroses and Polyanthuses, but of all flowers in which this difference of form is observable, for the principle is one which holds good in all such cases, so far as our present knowledge goes. Mr. Darwin goes into the question of the specific identity of the Cowslip, Primrose, and Oxlip, which are considered by some authors to be merely forms of one and the same species; he concludes that although these are probably descended from "a common primordial form," they are now as fixed in character as many others which are universally ranked as true species, and that "they have as good a right to receive distinct specific names as have, for instance, the ass, quagga, and zebra." In speaking of the Oxlip it must be understood that the true Oxlip (Primula elatior of Jacquin, the "Bardfield Oxlip" of English writers) is intended. This plant, which is found in England only in Cambridgeshire, the north of Essex, and the west of Suffolk, is, as all who have grown it know, a most distinct plant; as Mr. Darwin says, it differs so much in general appearance from the common Oxlip that no one accustomed to see both forms in the living state could afterwards confound them, and yet it is difficult to define exactly any one point in which the two plants differ, except that in the true Oxlip the linear-oblong capsules are as long as the calyx. We have often wondered that this Bardfield Oxlip has not become more popular as a spring garden plant: we have been the means of introducing it to two gardens, in both of which it grew well and gave great satisfaction. In cultivation it is a much larger plant than any form of Primrose or Cowslip, and flowers very freely somewhat later than its congeners. The blossoms, which are usually described as inodorous, have in reality a very peculiar and rather unpleasant smell, resembling that of the Starch or Grape Hyacinth (Muscari racemosum), while those of the common Oxlip have a Primrose-like scent. The common Oxlip, which has often been regarded as a development of the Primrose, Mr. Darwin thinks "there can be no doubt is a hybrid between the Cowslip (P. veris) and the Primrose (P. vulgaris), as has been surmised by several botanists. It is probable that the Oxlips may be produced either from the Cowslip or the Primrose as the seed-bearer, but oftener from the latter, as I judge from the nature of the stations in which Oxlips are generally found, and from the Primrose when crossed by the Oxlip being more fertile than conversely the Cowslip by the Primrose. The hybrids themselves are also rather more fertile when crossed with the Primrose than with the Cowslip." It would take too much space to go into Mr. Darwin's proofs of the specific distinctions of the Cowslip and the Primrose, but their comparative infertility when intercrossed, and the absence of any trustworthy evidence that either species when uncrossed has ever given birth to the other species or to any intermediate form, are strong evidences in favour of their specific rank. The Polyanthus is shown to be a variety of the Cowslip, as had been supposed by some authors, though others, such as Martyn, in his edition of Miller's "Gardeners' Dictionary," assigned it to the Primrose.



Flowers of Primrose showing long-styled and short-styled forms.

The practical outcome of Mr. Darwin's observations on Primroses and their allies, so far as cultivators wishing to raise seedlings are concerned, is the fact that by the interbreeding of a "pin-eyed" and a "thrum-eyed" variety the largest proportion of fertile seeds is to be obtained. Many other species of Primula present the same difference of form, and among them the Chinese Primrose (P. sinensis), as well as the Auricula and the favourite P. cortusoides, and to them the same rule applies. The pin-eyed form of the Auricula is, however, not common among the varieties distributed by florists, as its flowers are less handsome than those of the thrum-eyed variety. According to Kerner, our garden Auriculas are descended from Primula pubescens, which is itself a hybrid between the true P. Auricula and P. hirsuta. This hybrid has now been propagated for about 300 years, and produces, when "legitimately" fertilised, a large number of seeds, the short-styled form being especially fertile.

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*"The Different Forms of Flowers or Plants of the Same Species." By Charles Darwin, M.A., F.R.S. London: Murray, 1877.

The chapters devoted to the common Purple Loosestrife (Lythrum Salicaria) are full of remarkable facts established by patient and tedious experiments. In this plant—one of the handsomest of British wild flowers—there are three forms of blossom, each containing a pistil different from that in either of the other forms, and "two sets of stamens different in appearance and function: but one set of stamens in each form corresponds with a set in one of the other two forms. Altogether this one species includes three females or female organs and three sets of male organs—all are distinct from one another, as if they belonged to different species." These forms are described at length, as well as the experiments tried upon them, all of which go to show the great proportionate fertility of legitimate over illegitimate unions, and the remarkable manner in which insect agency is adapted so as to ensure the greatest number of the former class of union, and hence to enhance the well-being of the plant. But one passage we must quote—a passage which Mr. Darwin gives as offering "a remarkable instance [of] how profoundly ignorant we are of the life-conditions of a species." This truth—for it is undoubtedly such—does not speak creditably for the advance which we have made in the knowledge of the life-history of the plants and animals which we describe so glibly: and it suggests that in spite of the improvement in this direction which Mr. Darwin has done so much to initiate and foster, our natural history is still too much a thing of the museum and of the herbarium. The Purple Loosestrife grows naturally "in wet ditches, watery places, and especially on the banks of streams, and though it produces so many minute seeds it never spreads on the adjoining land, yet when planted in my garden, on clayey soil lying over chalk, and which is so dry that a rush cannot be found, it thrives luxuriantly, grows to above 6 ft. in height, produces self-sown seedlings, and (which is a severer test) is as fertile as in a state of Nature. Nevertheless it would be almost a miracle to find this plant growing spontaneously on such land as that in my garden." Here is surely a hint worth taking by those who invest in Lythrum roseum superbum, the grand name by which some of our nurserymen have rechristened this common and beautiful plant. We heard just lately of a somewhat similar instance of the prosperity of a species under altered and abnormal conditions; this was the case of a large patch of White Water Lilies, which were growing in a pond from which the water had almost entirely drained away; far from being injured by such a state of things, the Nymphæa produced flowers and leaves in abundant luxuriance, both standing erect on their stalks and forming quite a jungle. The large size attained by certain plants when introduced to entirely fresh regions under altered circumstances—as, for example, the Watercress in the rivers of New Zealand—is another aspect of the same subject, or perhaps more strictly speaking, another branch of it.

Such are one or two of the salient points of Mr. Darwin's volume, but it is unnecessary to add that no adequate idea of its value and importance, or of the interest and variety of its contents, can be gained from so brief a notice as we are able to give in the limited space at our disposal. Mr. Darwin's books are too solid to be fairly dealt with in the cursory manner which alone is possible to a horticultural journal such as The Garden; but we trust that enough has been said to urge upon our readers to take the earliest opportunity of consulting it for themselves. They will find in it another illustration of the truth that science need not be dry or uninteresting, and they will thank Mr. Darwin, as we do, for this latest addition to his already numerous claims upon our gratitude.

James Britten.

The Royal Parks and Gardens of London, &c. (By Nathan Cole. With numerous wood engravings and geometrical designs).—This book is devoted to the history of and manner of embellishing the London parks, and contains hints on the propagation and culture of the plants employed, arrangement of colours, &c. The sections of his work devoted to the arrangement of colours in flower-beds, the mode of planting carpet and other beds, are better than the chapters devoted to the description of the several public gardens round London. It is, in fact, a record of the bedding-out in Hyde Park, with which Mr. Cole is well acquainted. We could wish him a better fate than to be pottering over this, as his intelligence and knowledge are worthy of a better cause. From the point of view of the makers of extremely bad and primeval patchwork by the aid of unfortunate flowers the book is all that could be desired, but the wood engravings are, for the most part, such as one only sees in the ballads that adorn the windows in obscure parts of London. It is to be regretted that there are not a few coloured illustrations added, showing the effect of the bedding-out in its simplest expression. They might serve to show future ages the graces and refinements of which it is capable.

The Plants of Eastern Europe.—As an appendix to the Hungarian "Journal of Botany" there will be printed a catalogue of the "Flowering Plants and Ferns of Servia, Bosnia, Herzegovina, Montenegro, and Albania," compiled by P. Ascherson and A. Kanitz. The first part, containing the Ferns and Grasses, accompanies the August number; the distribution of each species through the provinces is given. A general list of the flora of this part of Europe has long been wanted.

A Study of the Cucumber Family.—In the "Mémoires Couronnés et Autres Mémoires" of the Royal Academy of Brussels, M. A. Cogniaux has published the second fascicle of his "Diagnoses de Cucurbitacées Nouvelles." The account of the genus Anguria is completed by a critical review of the species; and the genera Ceratosanthes, Apodanthera, Elaterium, Cyclanthera, Elateriopsis, and Echinocystis are successively treated of in an historical *resumé*, an enumeration of the known species and detailed descriptions of the numerous novelties. A plate illustrates the genus Gurania by figures of the anthers in the different species.

PUMPKIN SEEDS AND THEIR ACTIVE PRINCIPLE.

The nature and location of the active principle of the Pumpkin seeds appear to have been determined by Heckel, of Nancy, who has published an interesting memoir on this subject. In the French drug trade Pumpkin seeds are derived from Cucurbita maxima, C. Pepo, and C. moschata, which are equally serviceable against tape-worm, while the black seeds of C. melanocarpa, or the seeds of the closely-related genus Cucumis, are entirely devoid of medicinal value, since the two latter lack the very membrane in which the active principle resides. The seeds of the three first-mentioned species differ chiefly in dimensions and colour. Those of C. Pepo (Pumpkin) are the smallest, having an average length of 6—7 millimetres, rarely as much as 20—25 mm.; they are oblong-ovate, have a groove along both edges, where they are thickened, and have a dirty white colour. The seeds of C. maxima are 18—25 mm. long, by 10—15 mm. broad, are regularly oval, and vary in colour from white to orange. C. moschata has slightly smaller seeds, 16—22 mm. long, and 9—12 mm. broad, pure white, grooved, and the surrounding thickened edge of darker colour. These three varieties of seeds consist of a perisperm made up of four coats, and an embryo with two thick oily cotyledons. The most external coat of the perisperm is an exceedingly fine membrane, constructed from a single layer of oblong cells, which imparts to certain varieties a characteristic silver-gray appearance. Below this lies the tougher testa, made up from singularly polyedric, finely incrusted cells filled with starch. Both of these coats are removed by washing the dried seeds, while the washing of fresh seeds removes also the next two coats. The first of these—the third coat, counting from outside—is dirty white, of a loose and spongy texture, and consists of spherical reticulated cells. The fourth and innermost coat, finally, which has a dark green colour when fresh, changing gradually to greenish yellow, has a chartaceous appearance and consists of two layers: the outer one made up of hexagonal or pentagonal cells with moderately thick walls, including chlorophyll and a resinous mass; the inner one formed by elongated cells, including starch. The resinous mass in the outer layer of the fourth or innermost coat of the seeds is, according to Heckel, the active tænicidal principle, and not, as has been supposed, the fatty oil residing in the cotyledons. Owing to the absence of this papyraceous membrane, which alone contains the resin in other Cucurbitaceous seeds, these latter are inert. At the same time it is shown that even active seeds become inert, when they are blanched in a fresh state, as all the coats are thereby removed.—"Pharm. Zeit."

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

September 4.

The principal exhibits at this meeting consisted of a collection of Tomatoes from the Society's Gardens at Chiswick, and a collection of fruit from Messrs. Rivers & Sons, Sawbridgeworth. Cut blooms of Dahlias and Asters were also well represented, as were likewise hardy seedling Begonias, baskets of which were furnished by Messrs. Veitch & Sons.

First-class Certificates were awarded as follows :—

Pelargonium New Life (Cannell).—A scarlet-flowered kind, conspicuously striped with white and salmon, and well suited for pot culture.

Dahlia Louisa Neate (Keynes).—A bold, well-formed, delicate mauve-pink flower, with a creamy-white centre.

Dahlia Charles Wyatt (Keynes).—A stiff-petalled kind having rosy blooms striped and spotted with crimson.

Dahlia Bessie Ford (Keynes).—A bright rose-petalled flower of medium size and good substance.

Dahlia Henry Bond (Keynes).—A brilliant purple-flowered sort, beautifully formed, and very distinct.

Dahlia The Countess (Keynes).—A large, rather flat flower, with whitish purple-edged petals.

Miscellaneous Subjects.—The collection of Begonias from Messrs. Veitch & Sons comprised kinds of dwarf habit furnished with flowers of a variety of colours, from a blush to a deep crimson and scarlet. In addition to the Dahlias from Mr. Keynes, to which certificates were awarded, he also showed other seedlings of a promising character. Messrs. Rawlings, Romford, and Mr. G. Harris likewise sent blooms of Dahlias of a meritorious description, as did also Mr. Turner, Royal Nurseries, Slough; the last-named exhibitor also sent cut blooms of Petunia Mount Beauty, a single-flowered kind, of large size, having bright purple flowers with white centres. Cut blooms of Hydrangea paniculata grandiflora, Tropæolum speciosum, and Magnolia Lenné were sent in good condition by Mr. R. Kinghorn, Sheen Nursery, Richmond. Cut flowers of seedling Lapagerias came from Mr. G. Stokes, gardener to Mrs. Charles Crosland, Huddersfield, one variety being evidently a cross between the white and crimson-coloured kinds. Mr. G. F. Wilson exhibited a fasciated stem of Agapanthus umbellatus, bearing a very large head of flowers. A vote of thanks was awarded to Mr. Ollerhead, gardener to Sir H. Peek, for a finely-flowered plant of Oncidium Lanceanum, one spike of which bore forty sweet-scented blossoms of a large and beautiful description. Mr. Cannell sent a box of cut blooms of Double Pelargoniums of several colours, varying from pure white to dark magenta; also a box of single blooms of a superior kind. From Mr. Laing came a specimen of Nephrolepis exaltata compacta, a Fern of upright habit, and having narrow fronds of a bright green colour: well fitted for pot culture. Mr. Parker sent examples of Lobelia syphilitica and Hydrangea paniculata grandiflora. A Coleus, named Miss Scholfield, resembling Duchess of Edinburgh, was shown by Mr. H. Craike, Sand Hall, Yorkshire. Messrs. Carter & Co. contributed cut blooms of African Marigolds in good condition. Stands of Asters came from the Society's Gardens at Chiswick; amongst them were Dwarf Chrysanthemum-flowered, Pæony-flowered, and Quilled varieties, all in excellent condition. Examples of a tree Carnation, named Lady of Avenel, were contributed by Mr. Turner, of Slough: it is a pure white-flowered kind, of good habit, and well worth attention.

Fruit and Vegetables.—Mr. Gilbert, Burghley, sent five kinds of Persian Melons; and several varieties of Peaches, Nectarines, and Pears came from Messrs. Rivers. The collection of Tomatoes from Chiswick, already alluded to, consisted of thirty varieties, of which an account was given in last week's Garden (see p. 219). Mr. Turner, Slough, sent tubers of the Potato called Schoolmaster, evidently an excellent variety.

OBITUARY.

Hugh Algernon Weddell died at Poictiers last month from heart disease, from which he had suffered for several years. Though English by birth, he was completely French by adoption. His valuable monographs of the Urticeæ and the Podostemaceæ, and his monograph of Cinchona give him a high rank as a botanist, but he is perhaps best known in connection with the flora of South America. His travels with the expedition of M. de Castelnau commenced in 1845, in which year the "Voyage dans le Nord de Bolivie" was published. The two volumes of the magnificent "Chloris Andina" appeared in 1855-57. M. Weddell was at one time *aide-naturaliste* at the Museum; in early life he paid much attention to the plants near Paris, and gave active help in the preparation of Cosson and Germain's "Flore des Environs de Paris," first published in 1842; he was also a good lichenologist. His loss is great, and is felt widely, especially in England, where he had many intimate friends.

Stains on Pavement.—Can any correspondent of The Garden tell me what are the best means of removing stains on flags in the greenhouse caused by fallen flowers being trodden upon?—J. C. R.

HARDY FLOWERS.

Auriculas.—A well-known grower of these wrote to me a few days ago as follows :—"My plants are getting very active, and I am dreading an autumn bloom." The moist weather has certainly accelerated, to some extent, the development of plants grown under glass, and they are apt to throw up blooming stems, which give imperfect pips, and if allowed to expand, the plants will be weakened for their spring blooming. The best thing to do is to pinch off the head of each bud, and then the stem will gradually decay. If it be pinched out close to the leaf-axil from which it springs, it will sometimes decay rapidly, and communicate it to the plants, thus occasioning incalculable injury. At this time of year the plants are best in a raised frame, under a north wall, with the pots standing on an ash-bed. In such a position the Rev. F. D. Horner has his plants at the present moment, and they have not yet begun, or only just begun to make their autumn growth. The lights are pushed off in dry weather, but drawn over the plants when rain falls, and propped up in front to admit air. All the fine growth made after the summer potting will soon decay, and the autumn growth, which is made during the month of September, will furnish the plants for the winter. My own plants in the neighbourhood of London, which were repotted a month after those of the Rev. Mr. Horner's, are now more advanced, owing to the weather in the south having, in spite of all its drawbacks, been warm and more sunny than that in the north. The plants may now be kept fairly dry, but not dry enough to cause the leaves to flag. The soil should be occasionally stirred, in order to keep the surface open and sweet. No quarter must be given to slugs, which need to be carefully looked after. There is also a small green caterpillar that eats its way into the heart of the plants and destroys them before it is noticed; and it invariably passes over an indifferent kind, and attacks a good variety. Now that rain necessitates keeping the lights rather close over the plants, aphides are apt to gather about their centres. They can be dispersed by means of a camel's-hair brush. The Rev. F. D. Horner has just made a trial of a tablespoonful of paraffin oil mixed with a gallon of water, but as it requires to be applied with great care it should be administered only by some one who thoroughly knows the nature of the plants to be operated on. Any offsets that have put forth a root should be carefully detached from the parent plant and put in round the sides of the pots in which the parent is growing; they soon begin to grow, when they should be potted off singly, or they can be put in store pots in good soil thoroughly well drained, but planted 1 in. below the rim so that a piece of glass can be laid over the pot. Offsets that have not made roots, but which have a piece of tap root attached, will soon make root when treated in this way. No time should be lost in sowing seed. Take an 8-in. pot, place in it 1 in. or more of crocks for drainage, and over these put a thin layer of Moss, then a few small pieces of fibry turf, and fill up with fine fibry turf and leaf-mould, pressing all down gently so as to form a level surface. On this sow the seed thinly, and cover it with a piece of glass, keeping it moist and cool. Some of the seeds will germinate at once, others not till the spring. In the Rev. Mr. Horner's seedling-house may be seen plants of the same sowing, but differing greatly in size. The largest are from the seeds that grew in autumn, the smallest from those which germinated in spring. As soon as the earliest plants are large enough to prick off in 5-in. pots (fifteen or eighteen in a pot) this should be done, as it leaves space for the remaining seeds to break into growth, and they will continue to do this through the winter and on into the early summer. If Moss grow over the surface a little lime water will destroy it without injuring the tender seedlings.

Large-flowering Chrysanthemums in Pots.—Plants in the open air will now require attention. If fine flowers be desired, each leading shoot should carry but one bud; and those that break out at the side should be pinched out. Earwigs are getting troublesome, for they insinuate themselves into the neighbourhood of the bud, and prey upon it. They lie so close around it, that it requires watchful care to keep them from doing injury. Each branch should be tied out to a stake thrust into the soil round the rim of the pot; this not only keeps the plant in good shape, but allows air to circulate freely among the branches. As the usual rule is to plunge the pots at this time of the year, it should not be done so deep as to bring their rims close to the plunging material, or the roots will find their way over the sides into it, and by-and-by, when the plants are taken out of the bed, a check will be given to them which may seriously affect the quality of some of the flowers. Mildew must be looked after; it is very liable to make its appearance just now, when the weather is wet and cold. It generally commences its attacks at the tips of the leaves, gradually spreading over them both above and below. Immediately it is discovered, sulphur should be at once applied, and thoroughly dusted on the parts affected, repeating the dose as required. Give the plants plenty of room, so that air may circulate freely among them; this greatly checks mildew. D.

SPRING CABBAGES.

From the middle to the end of this month is the best time to plant the main crop of Cabbages for spring use. Cabbages are gross feeders; therefore, to plant them on poor land without manure is the prelude to tough, leathery produce. Practical men doubtless soon discover the best way of cropping and managing land; but the knowledge comes more quickly when one knows something of its geological formation. For years I have grown Cabbages after Onions without manuring or any cultivation beyond a deep hoeing, and the produce is earlier and better, and there are fewer failures in severe winters than when the land has been manured and dug for their especial benefit. This would not, however, be the best plan to adopt unless the land was in good heart. I do not think it is well to plant double the number of plants that are intended to remain, as is sometimes recommended with the view of using half of them in the shape of Greens. In that case trampling and poaching in all weathers to gather them does more harm to the main crop than the Greens are worth. It is better to plant Coleworts thickly on any vacant piece of land, so that when they are cleared off, the ground can be prepared for some other crop. From 18 in. to 20 in. apart each way will be space enough to allow for the Enfield Market and other large kinds; Atkins' Matchless, or the Early York section will do with much less space. It is always a good plan to plant out a small patch—in proportion to the demand—on an early border; they will come in at least a fortnight or three weeks before the main crop on the open quarters. They may be planted much thicker than the former, and the stalks should be pulled up, to make room for something else, as soon as the hearts are cut. A thickly planted crop like this growing on a dry, warm site will be much benefited and forwarded by a couple of good soakings of house sewage, or some other form of liquid manure after Christmas.

E. Hobday.

COST OF SOME OF OUR PUBLIC GARDENS.

	Year ending March 31, 1877.	Year ending March 31, 1878.
	£	£
St. James', Green, and Hyde Parks	34,309	36,534
Kew Botanic Gardens and Pleasure Grounds ...	22,622	20,967
Regent's Park	10,143	9,930
Victoria Park	8,250	8,613
Battersea Park	7,652	7,824
Kensington Gardens	6,524	7,314
Richmond Park	3,168	3,030
Greenwich Park	3,169	2,963
Richmond Park (Department of the Ranger) ...	2,810	2,842
Bushy Park	2,417	2,230
Hampton Court Pleasure Grounds...	2,154	1,953
Holyrood Park	1,877	1,848
St. James', &c. Parks (Department of the Ranger)	1,795	1,806
Edinburgh Royal Botanic Gardens	1,807	1,763
Kennington Park	1,361	1,644
Albert Road, Regent's Park	1,165	1,165
Richmond and Kew Roads	1,467	1,566
Hampton Court Roads	792	887
Hampton Court Park	943	877
Bethnal Green Museum Grounds	363	348
Chelsea Military Asylum Grounds...	235	240
Salary, &c., of the Bailiff of the Royal Park. *Treasury Letter*, 17th November, 1876, No. 16,639		355
	115,023	116,699

Œnothera grandiflora = Godetia Whitneyi.—This Œnothera is reckoned the largest-flowered and prettiest species in cultivation. The plants are 18 in. high, much branched, and the flowers, from 2 in. to 3 in. in diameter, are crowded at the summit of the stems and branches. The ground-colour of the petals is a pale, purplish-tinged pink; some blooms are almost self-coloured, others faintly pencilled with bright purple-crimson, and others again have large, intense blotches of the same hue. Many years ago the pale, unspotted kind was figured and described in the "Botanical Register" as Godetia grandiflora, a bush 2 ft. high, and native of the north-west coast of North America. In 1870 the most brilliantly spotted flower was figured and described by Dr. Hooker in the "Botanical Magazine" as Œnothera Whitneyi, "first collected by Dr. Bolander in Humboldt Co., California, in 1867." Subsequent observations, however, have, says Mr. W. Falconer writing in the "Rural New Yorker," proved that both are figures and illustrations of the same species. Pale and highly-coloured flowers are not both found on one plant, and I cannot say whether or not seeds of the pale-flowering variety will produce a progeny having intensely blotched blooms; but next year I mean to satisfy myself on this point.

Browallia Roezli.—This is an introduction of the indefatigable Swiss collector, Benedict Roezl, who deserves to be named as a remarkable instance of what may be accomplished by an indomitable will, and whose adventures, if written, would probably afford another proof, if any be needed, that truth is stranger than fiction. This new species of Browallia is described as forming a dense compact bush, 16 in. to 20 in. in height, clothed with shining green leaves. The flowers are either of a delicate azure blue, or white with yellow tube, and are unusually large for the genus. They are produced in uninterrupted succession from spring until autumn. It is said to be a native of the Rocky Mountains, but more probably of the Sierra Madre.—W. Thompson.

QUESTIONS AND ANSWERS.

Potato Disease and Salus.—Mr. Fish truly describes the Potato crop (see p. 199) as a wreck. What has been the effect of "Salus" on the disease?—J. Groom, *Henham*. [We fear, says the "Gardener's Chronicle," it will not do to put too much trust in Salus. The worst patch of Potatoes we have seen this year was one dressed with this material, and by its side was a similar patch of equal size, and planted with the same variety of Potato, which had not been treated with the Salus. It was quite evident that the Salus had acted as a fertiliser, the haulms being more vigorous and taller where the Salus was applied; but the whole patch was equally, and very severely attacked with the disease.]

Edwardsia grandiflora.—We have a plant of this in a large pot in our museum garden here, which from some reason or other has never bloomed though it is quite an old plant. It is planted in a compost of rotten Chestnut wood and leaf-mould. Can Mr. Fraser (see p. 160) tell me why it does not produce flowers, and how it can be made to do so?—Preston Powers. [The cause of the plant in question not flowering is doubtless the peculiar kind of soil in which it is growing; try it in good substantial loam, rather stiff than otherwise, so as to induce it to form short-jointed shoots, which if well ripened will be almost sure to flower the following season. It would probably also do better planted out than kept in a pot.—Hugh Fraser.]

Water Weeds.—Enclosed are three kinds of water weeds which have appeared for the first time since a small lake was cleared out more than two years ago, and which have become a perfect pest. No. 1 grows with frightful rapidity. The waters of the lake, which is in S. Wales, are chiefly from springs rising from the bottom or running into it, with also water from a brook, into which water from a canal at a considerable height, also fed by springs, runs occasionally. What are the names of these water plants, some of which have now begun to appear in two fountains at some distance from the lake, but fed by it?—L. L. [The names of the plants sent are (1) Anacharis Alsinastrum or American Water Weed; (2) apparently a Myriophyllum; and (3) Conferva arenosa. Perhaps some one will kindly advise our correspondent as to the best means of getting rid of these weeds.]

Plants for Wardian Cases.—I have a glass case (4 ft. long, 2 ft. 8 in. wide. and 3 ft. high) with zinc drawer beneath 3 in. deep, capable of being filled with hot water, and heated by one or more oil lamps. There is also in each corner a pipe, ½ in. in diameter connected with the drawer, so as to admit, if needed, vapour into the case. The case stands in a room looking south, but slightly shaded by a tree from the sun. The room is over a warm one, and Pelargoniums have stood all through two winters without the least harm. 1. Will this be likely to accommodate Ferns and Club Mosses such as Adiantums, Selaginellas, a Todea, variegated Begonias, North American Cypripediums. Darlingtonia californica, Cephalotus follicularis, and Sarracenia purpurea. 2. What is the best Palm for the case? 3. Would a small plant of the Dicksonia antarctica succeed? 4. What is the best trailing plant for a case? 5. Would Odontoglossum Alexandræ, Cœlogyne cristata, or any one of the Cattleyas do in cork baskets fastened to the top corners? 6. Would a glass for water plants be better in the centre; if so, what plant would do best (glass 14 in. wide, 12 in. deep)? 7. Do the small fountains advertised as self-acting require to be connected with a water pipe, or do they act if placed in an aquarium? 8. Would any of the Nepenthes grow in the case? I have the Begonias growing in a sitting room window, and this year they have put out from three to five leaves, but I am afraid they will find the room too dry in winter. 9. What temperature in the case would suit them best?—Alfred Burton, *Manchester*.

Cucumber Blue Gown.—This is an old but truly fine variety, and excels almost all other kinds in the depth of its colour and the quantity of rich bloom by which it is covered. It is a real black-spine kind, and, as is usual, excels smooth fruit by the richness of its flavour and the crispness of its flesh. It is robust, does well either in heat or in a cool frame, and is a most abundant bearer.—A. D.

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> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

SHELTER FOR ORCHARDS.

Two successive seasons of comparative failure as regards the production of hardy tree fruits ought to induce fruit growers to consider how such failures may be avoided in future. Last year the fruit crop was but moderate, and with many a total failure. This year it is worse; in fact, of Plums, Apples, and Pears—the chief standard orchard crops for market—there is not a twentieth part of an average. Attempts are being made to ascertain, amid the almost general sterility, what particular varieties have borne best this season; but such knowledge must, as a matter of course, prove delusive, as the very sort that produces a crop one year will not invariably do so the next. The lack of fruit this season is attributed to the wood not being well ripened last autumn rather than to the fierce frosts and bitter north-easterly winds that were experienced during the flowering period. The bloom last spring was generally admitted to be abundant, and wherever a few fruits have set, they have invariably been on the most sheltered parts of the tree, clearly showing that protection produced fruitfulness. There is one fact connected with the question of the ripening of the wood that requires special attention, and that is its relation to the production of a second crop, such as often follows any mishap as regards the setting of the first blossom. The wood that produces such blossom and fruit is, in every case, that of a first or early summer growth, both green and pithy; yet, as a rule, such blossoms always set and produce fruits which come to as great a degree of perfection as the lateness of the season will permit. Does not this indicate that there is much less reason to look for the cause of a failure of a hardy fruit crop in the comparative immaturity of the previous season's growth than some would have us believe? If so much is to be said against last summer and autumn with reference to wood-ripening, what of the present, which has been both moist and sunless? Yet this season's wood is ripening well, and this, too, in spite of the fact that the trees are making a very robust growth consequent upon their comparatively fruitless condition. If we get a good fruit crop next year we shall hear nothing about the preceding season's lack of ripening properties; but whether the cause of the present scarcity of fruit be a moist autumn or an ungenial spring, the fact remains that shelter is the one great thing wanted for our fruit trees. Shelter will afford more warmth in autumn, and, what is more important, it will give protection to the blossoms in spring. I find, on inspection, that in nooks or hollows where there is good shelter afforded by tall trees or the formation of the land, there are fairly good crops—in some instances quite heavy crops; but that where the trees are exposed or swept by the winds, there are few or no fruits. Protection to hardy fruit trees of a strictly artificial kind can only be given on a very limited scale and in such a way as to render it, in a national point of view, of but little value; but natural and really efficacious shelter for very large extents of fruit trees might be obtained by planting numerous belts of Spruce or Scotch Fir in such a way as to effectively break all harsh winds coming from the points of the compass included between north-west on the one hand and south-east on the other. Thus, in forming an orchard of great extent, it would be desirable to plant on the extreme verge of the aspects mentioned a double line of Firs; perhaps Spruce and Scotch intermixed would be best, and then similar single lines to correspond at intervals of 100 yds. apart until the entire orchard was fully protected. The Firs in the course of time would tower up and form dense hedges of foliage that would both temper and weaken the force of the wind, and give the trees at the critical period of blooming the best shelter that could be afforded them, whilst they would prove useful in sheltering the trees from fierce westerly winds in the autumn when laden with fruit. In planting it would be well to put the earliest kinds on the sunny side of the plantation, as these would have their blossoms in the greatest danger, whilst the most robust kinds should be planted on the north side, as these would need less shelter and would also retain their fruit much longer, and thus allow a more lengthy season for ripening. Something of this kind deserves a trial if profitable results are to be expected from fruit culture.

A. D.

FLINTERIES AND CLINKERIES.

In many respects, where it exists at all, the Fernery is the truest rescript of Nature, and consequently the most tasteful part of an English garden. The Fernery, however, is by no means perfectly understood. Too often it merits rather the name of a flintery or a clinkery; an imitation of natural rocks is undoubtedly meant, but the result, like the "tufa" in an aquarium, is like anything rather than Nature. Ferns are rare on the chalk, rarer still on flint, and unknown in a wild state on clinkers. On the other hand they abound on the carboniferous or mountain limestone, and on many sandstone formations; many also frequent the stumps of trees or the deep vegetable mould of the wood or stream side. Ferns undoubtedly often occur alone in a wild state, apart from all flowering plants, and this justifies their being placed apart in the garden. Let our Ferneries then be made of grey limestone for the Ceterach, Wall-rue, and Polypodium Robertianum, or of the readily-obtainable beautiful iron-shot masses of sandstone. Shade may be said to be a *sine qua non* with nearly all Ferns except the Brake. I have seen the little English Maidenhair (Asplenium Trichomanes) equally flourishing on limestone and on sandstone. Hart's-tongues will grow almost anywhere, deep in a well or down an area, in a thick hedgerow or in a dark corner; but for them, and still more for the Blechnum and the Osmunda among our common English Ferns, the stony sides of a stream or dripping well with a cascade and mirror-like basin are most desirable. Over this can hang a stump or pollard with Polypodiums (Welsh and English), and so varied may be the treatment of these elements that they would not weary one if in every garden. Where the rocks appear as such and not as pebbles, they should be in large masses protruding naturally from their surroundings, not built into a wall or stuck in rows of chips like the "ten-penny nails" in a wall. Of course limestone and sandstone must not (they often are) be mixed helter-skelter. A little Bracken, with its natural allies the Heaths, has a charming effect in the peaty soil of Rhododendron beds. May we see the last of flinteries and clinkeries!

G. S. BOULGER.

ALPINE PLANTS AT HOME.

ALTHOUGH the village of Zermatt lies at a height of some 5000 ft. above the sea-level, the flora of the meadows in its immediate vicinity on either side of the glacier-stream, the river Visp, which flows through it, differs as widely from that which I have described as characterizing the mountain sides above it, as that of our ordinary English fields from what would be furnished by Snowdon or Ben Lawers. The woods which intervene between the two zones—woods where the noble Pinus Cembra asserts its supremacy more and more as we ascend till it reigns alone—are a sort of medium of communication, where they exist, between the two floras. Their own resources of floral interest are by no means contemptible, although the masses of broken rock, which for the most part furnish materials for their undergrowth, are favourable to but a limited section of vegetable life. One very striking Alpine flower is conspicuous amongst the rest, and deserves the palm for general dignity, Aquilegia alpina, which grows in considerable quantities amongst the decaying leaves and fibre and Moss in the more open spaces, and of dimensions, I may add, far exceeding the drawing of it in a past number of THE GARDEN. Of many specimens which I examined I found none with white petals, though on one plant they were whiter than the spurs, of a pale, chalky blue. Its cultivation in England is considered difficult, and I have myself found it so, yet I cannot help hoping that where it can have shade, moisture, light soil, with abundance of leaf-mould and thorough drainage, it will not only establish itself, but flower freely. The next most precious inmate of the woods, judged by considerations of general attractiveness rather than of beauty, is Linnæa borealis, which is to be found sparsely, cowering under boles of larger trees, half-buried in Moss. I suspect, to naturalize it successfully, all sunlight but the merest glances must be excluded. The soil must be made up of half-rotten Moss and fibre, and while impatient of stagnant moisture, it must never be allowed to get dry. I have been struck, I may observe, while looking closely into the growth of these Alpine plants in their natural haunts, by perceiving how much more seems to depend on *mechanical* than *chemical* conditions. The constituents of the soil, for instance, may vary ever so much, without affecting the health and vigour of the plant, yet without fail the texture will be found the same, offering just the same facility for the course of the roots, for the retention of moisture, and so forth. Polygala Chamæbuxus I found in abundance, the common form of it, and the more striking variety with the crimson instead of orange wings. While speaking of Polygalas I wish to record a very showy species which I was not able to identify to my satisfaction, the flowers of a bright rose colour and larger than those of P. calcarea are represented, growing on the warm open slopes. Possibly it was a variety of P. calcarea, though of the normal form I found no trace. It would be a most valuable acquisition for a rockery, if once established. The May Lily (Maianthemum bifolium) ran riot in stony openings beyond the reach of drip, and the ground generally was draped with Vaccinium Vitis-idæa. I have said nothing of the Ferns of the district, for indeed I saw little worth recording. Asplenium septentrionale was abundant, and Botrychium Lunaria of dimensions scarcely credible to those who only see it on chalky downs in England. But nothing rarer than these came in my way, though I heard rumours, which careful search did not enable me to confirm, of Cystopteris montana. Let any one who desires to enjoy the flowers of Alpine meadows see them before the ruthless scythe sweeps over them, at the end of June or early in July. The hay of a Zermatt peasant is largely compounded of Campanulas (barbata and rhomboidalis), Gentians, Phyteumas, Hieraciums, Martagon Lilies, Cistuses, and other flowers too many to enumerate. Where a few loose stones give protection, the Alpine Rose (Rosa alpina) flourishes in profusion, varying in colour a good deal, dependently on shade and moisture, and the formal, regular foliage is singularly handsome. But perhaps if one of the commoner plants of the valley had to be singled out for pre-eminence in the amount of decorative beauty it supplies, I should fix upon the Cobweb Houseleek (Sempervivum arachnoideum). To say that every rock fully exposed to the sunshine was more or less covered by it might be an exaggeration, but yet scarcely so; and then one single surface may have a thousand of its little bud-like nodules, of every shade, from the rich brown of an old Hazel nut to the palest green, and every single one with its quota of cobweb, as though a spider had located itself in each. Where we fail to cultivate it successfully at home, the reason can only be that we will not believe in its hardihood and independence of all the conditions of vegetable life, except sunshine. Give it this and just space enough on the surface of the rock to hang on by, and the less soil and watering—to judge by its native haunt—the happier will it be. By-and-by we shall be wiser in our cultivation of these rich mountain treasures—we amateurs, I mean, who have to look after this department of our gardening, for the most part, ourselves, and often learn our lessons best by means of failures. Probably in very many cases we leave out some one single factor from our calculation which makes our result altogether wrong, for the best manner of cultivation is sometimes not so much an exact following of natural conditions as a compromise; something is wanting which we cannot supply, as, for example, the scorching sun of the short Alpine summer, or the snow covering of the long winter; and the whole problem must be re-adjusted accordingly. What I think we often want is more detailed information of successful methods which have been adopted, entering into very exact *minutiæ*; for as far as my experience reaches, the sort of information supplied by horticultural books goes a very little way. It may answer in some particular case, or it may not. When plants are bought of nurserymen, it is always unwise to buy the half-established (because cheaper) specimens; and so when they are collected and brought home, they must be treated with every care in cold frames or otherwise until thoroughly rooted and in vigorous health, before being placed in their final destinations. It is a great thing to ascertain by careful study how they live at home, but it is also a further and as necessary a step to know what substitute for those home conditions they like best. I have related some of my Zermatt experiences of this summer more with a view of getting information—ultimately, at least—than of imparting it; and nothing will please me better than that any one should be induced by what I have written to follow up some of the tracks I have indicated, and by the superior knowledge they acquire set me right where, as is very probable, I have proved an untrustworthy guide. Canonicus.

NEW HEATING APPARATUS FOR THE PALM-HOUSE AT KEW.

The boilers first used for heating this noble structure were completed in 1848, of the pattern known as Sylvester's "fluted conical." As these gave way, tank boilers, which we should now look upon as very antiquated, took their places. Subsequently the old-fashioned tank boilers were replaced by the "chambered saddle" pattern. In the Directors' report for 1875, we read that "five of the existing boilers are from sixteen to seventeen years old, the remaining six are "improved saddles," and have been put in during the last three years. This state of affairs was not considered very satisfactory, particularly as each boiler heated a separate section of the house, and a number of fires necessitated continual stoking and a large consumption of fuel; we therefore find the Directors advocating a total re-arrangement of the heating apparatus. This, at last, is being carried out; the number of boilers is reduced to six, and the separate sections of piping are being connected on the "universal flow-and-return" principle, which, as a matter of course, will secure a much more uniform distribution of heat. For many weeks a whole army of men have been employed in re-laying the stoke-hole floors. We believe a considerable thickness of concrete has been laid on 1 ft. of clay, and it is to be hoped that these means will prove effectual in preventing the recurrence of such troubles as were caused last winter by the floods and heavy rains. It seems the water came up through the floor of the stoke-holes, and every visitor to Kew could judge of the nuisance on seeing two powerful steam fire-engines at work on the Palm House Terrace. For some time, so great was the quantity of water that the fires could not have been kept in if the engines had not worked day and night. The puddling of the floors is already done, and the work of fixing the boilers and connecting the pipes is proceeding towards completion. The boiler selected is one recently invented by Mr. E. G. Rivers, of which we had not before heard. On inquiry, we find that its quick action and great heating powers have been fully tested in the new herbarium at Kew. One important feature in its construction is that its various parts can be readily repaired or renewed without removing any portion of the setting. The flues from the eleven original furnaces and boilers were connected with one, which was carried by a tunnel about 160 yards long to the tall shaft by the side of the Richmond Road. In the bottom of this shaft a fire was kept continually burning, in order to create a draught. The only important modification since then has been the disconnection of the twelve flues (the twelfth boiler heated the old Lily-house) in the tunnel, and their being made to discharge into two upright shafts, one in the centre of each wing. This alteration, it is needless to say, improved the draught, economised the heat, and effected a great saving of both labour and fuel. The great size of the Palm-house will be seen by the following comparison of its area with that of two nearly equally well-known plant-palaces, viz., Palm-house at Kew, 24,000 sq. ft.; great conservatory at Chatsworth, 15,276 sq. ft.; great conservatory at Syon House, 7785 sq. ft.

Gentians.—In The Garden of Sept. 8, I see that Mr. Farrer mentions Gentiana septemfida as doing well both in light loam and heavy clay. It seems to be one of the most accommodating of plants, as I have succeeded in growing and flowering it perfectly both in an ordinary border of very light soil, and also in peat among bits of sandstone. In this latter bed I planted last autumn several plants of G. verna, and also of G. pneumonanthe. The latter has done well, but I lost every plant of G. verna. Some that I had in pans, which were removed to the greenhouse during the winter, have done pretty well in a mixture of pot-mould and peat with bits of sandstone intermixed. I should be very glad to know how to succeed with it in the open border.—W. S.

NOTES OF THE WEEK.

Clematises in Autumn.—We have noticed lately some new and charming effects from the happy association of the new large Clematises and the old dense-flowering and sweet Clematis Flammula on trellises, &c. The effect of the large, purplish flowers through the cloud of white blossoms of the old Flammula is very striking.

No Sooner Out Than In.—Already, and even a week ago, there are numerous holes in the turf of our park gardens, showing where the large pots containing tropical plants have been removed indoors. Is it worth while taking so much trouble for so short a season? These tropical plants cannot be placed in the open air till the London season is nearly over, and must be taken indoors again before people return to town. This is a very artificial phase of gardening, the extension, or even the support, of which is open to very serious objections.

The White Japan Anemone in Shady Places.—There probably exists no more beautiful plant than this, with its swan-white flowers, delicate brush of golden stamens, and tall, stately habit. It seems to thrive everywhere, but I have noted it to be most lovely in the shade, where the flowers are not so much browned by the sun or broken by the wind. It is, I need hardly add, one of the best of all plants for the wild garden, being so hardy and so well able to carry on the struggle for existence with other wildlings.—V.

Roses and Tritomas.—I have lately seen some large flower beds that were extremely effective, especially at a distance. They were planted alternately with Tritomas and Souvenir de Malmaison Roses, a combination strikingly beautiful, as seen against the surrounding foliage of large trees. The Roses were on their own roots, and the strong suckers which they sent up were each crowned with innumerable lovely buds and blossoms, altogether finer in form and colour than those of which the midsummer bloom consisted. When large beds and ample room are not available, these two plants should always find a place in mixed borders.—J. Groom, *Henham.*

Autumn-flowering Irises.—Iris ruthenica is again in flower in its present situation, which evidently suits it. The bed in which it is growing is between two lines of Poplars and moderately moist. The habit of the plant is very interesting; the foliage forms, as it were, a basin, and from the base of each leaf come two, and sometimes three flowers. This Iris has been in blossom now for some time. Botanical authorities state that it blossoms in May, but in this country its time for flowering is evidently September. Iris pumila has also been flowering tolerably freely with me for some time past, and seems likely to do so for some time to come.—P. Barr.

New Gladiolus.—A flower-spike of a very handsome Gladiolus has been sent to us by Mr. Tillery, of Welbeck. "Some two or three years ago," writes Mr. Tillery, "I raised a hybrid Gladiolus between a seedling of gandavensis and carminata, and this year I have two plants of it in flower. It strikes me that it will make one of the very best varieties for decorative purposes, having with its rich crimson colour the bluish hue of a Cactus in the flaming of the lower petals." In the spike sent the flowers are large and unusually brilliant, their crimson-scarlet colour being set off to advantage by the bluish-white tint on the under petals.

Campanula Vidali and its Introduction.—In Notes from Kew (see p. 128) occurs the following passage:—"So far as is known this species is absolutely confined to a single rocky island off the east coast of Flores. It has never been gathered but once, and that was some twenty years ago by Captain Vidal during his survey of the island." A reference to the "Natural History of the Azores," by F. Du Cane Godman, published by Van Voorst in 1870, states that this plant occurs very locally on the coast of Santa Maria and San Miguel. The author goes on to say that its introduction into English gardens was not from the original discovered habitat of Flores, but from one or both of the other islands named, and that a plant of this species from his garden was carried to Kew.—Henry Buckley, *Wheeley's Road, Edgbaston.*

Kew Gardens.—The select vestry of Richmond have unanimously passed a resolution pledging themselves to do all in their power to assist the Kew Gardens Rights Defence Committee in their efforts to obtain the opening of Kew Gardens at an earlier hour than at present, and to the substitution of an iron railing for the unsightly brick wall bounding the gardens in the Richmond Road. Dr. Selle, in proposing the resolution, observed that no fewer than 58,000 persons visited the garden last Bank Holiday, and a great number, being ignorant of the hour of opening, were kept waiting about outside until one o'clock. The committee only wished to have the pleasure grounds open at an early hour, and did not desire to interfere with the arrangement of the botanical department in any way. The Kew Garden Defence Committee have received about £100 towards the preliminary expenses of the movement, and the Members for the division (Mid-Surrey), besides sending a subscription, have promised their support in the House of Commons if necessary. The movement deserves the support of all interested in horticulture. It is nothing less than absurd that a garden which costs the nation so much should not be open as early in the day as any other public garden. Frequently it happens that people in town and with little time to spare would gladly pay a visit to Kew if it were not that the arbitrary and unreasonable habit of opening it only in the afternoon interferes with their plans.

Show of Lilium auratum at Chelsea.—Several hundred plants of this Lily may now be seen in flower at Messrs. Veitch's. They are in 6-in. and 8-in. pots, single stems bearing from eight to twelve blossoms. They are arranged in banks on each side of one of the houses. Though extremely useful when mixed with ornamental-leaved or flowering plants of other kinds, yet these Lilies when grouped in the way just named are strikingly effective.

Romneya Coulteri.—This may be termed the queen of all the Poppyworts—a swan-white flower nearly 6 in. in diameter, and with a veritable mound of beautiful golden stamens in the centre. We are indebted to Dr. Moore for specimens from Glasnevin, where it has flowered, an account of which was given in last number of The Garden (see p. 228).

A Noble Indian Lily (Lilium neilgherrense).—I find that this Lily will grow and flower well without any special culture, the blooms under such conditions measuring 9 in. in length—under better cultivation they would doubtless attain in every way larger proportions. Their fragrance is delightful, and the blooms are of great substance: as a conservatory Lily it is perhaps one of the finest.—P. Barr.

Gastronema flammeum.—Numbers of this handsome Amaryllid may now be seen in bloom in the Pine-apple nursery. It is a plant seldom met with, but it well deserves attention, its rich flame-coloured flowers being scarcely less beautiful than those of a Vallota. It has the habit of flowering before the leaves appear, but this may be remedied by planting it amongst Ferns or Mosses.—S. C.

Dwarf Early-flowering Chrysanthemums.—Neat little plants of these may now be seen in quantity in Covent Garden market. They consist of yellow, white, and red flowered kinds, all very dwarf in habit, and useful at this season. For furnishing cut blooms alone such plants are valuable, and are highly appreciated in the market.—S.

Oncidiums at Holloway.—Several varieties of Oncidiums are now very effective in Mr. Williams' nursery at Holloway; they consist of such kinds as O. Rogersi, Marshallianum, and varicosum, all distinct and fine kinds. Small plants in 4-in. pots are producing branching flower-spikes, from 2 ft. to 3 ft. long, gracefully beset with large and brightly-coloured blossoms.—C. S.

The Golden-leaved Elder in Autumn.—As an effective plant in shrubberies, or as an isolated specimen on Grass, this Elder is one of the most valuable of yellow-leaved plants. It grows as freely as the type, and even during the summer months its leaves are strikingly bright in colour, contrasting well with those of a more sombre hue. It is used in Hyde and Battersea Parks, where it is planted in beds and associated with Prince's Feather, but isolated specimens are obviously the most effective.—S.

Miniature Apple Trees.—At the Alexandra Park fruit show on Thursday last, Messrs. George Paul & Sons showed a collection of miniature Apple trees of a most interesting character. They were about 4 ft. high, had been lifted from the ground and placed in baskets of Cocoa-nut fibre, and were literally loaded with good fruit. In seasons like the present, when in large orchards of established trees scarcely a fruit can be found, it is gratifying to find that small trees such as these, which can be planted 3 ft. apart, will yield heavy crops.

Tritoma (Kniphofia) Macowani.—This has been flowering freely with me for some time in 4½-in. and 3-in. pots, in which the plants vary in height from 1 ft. to 2 ft. Its graceful foliage and dwarf growth make it interesting to those who like plants of a distinct and striking character in their conservatories. As an outdoor plant with established stools throwing up from twenty to fifty spikes of bloom each, its value may be readily imagined. Herr Max Leichtlin considers it to be even hardier than Tritoma glaucescens, which has never sustained any injury during winter in my grounds.—P. Barr.

Fungus Feasts.—The third annual conference of the Cryptogamic Society of Scotland will be held at Dunkeld during October 10, 11, and 12. The president is Col. Drummond Hay, and the secretary Dr. Buchanan White, of Perth. The business of the conference will consist mainly in excursions, conversazioni, and an exhibition of specimens. The Society is now prepared to issue a First Century of "Fungi Scotici Exsiccati," which will contain many of the new species and rarities recently discovered.

THE KITCHEN GARDEN.

YOUNG ASPARAGUS BEST FOR FORCING.

There can, I think, be no doubt that young three or four-year old plants that have been specially prepared for the purpose, and that have never been cut from are the best for forcing. In their preparation there is much that may be done to encourage vigorous development both as regards stem and foliage during summer, that will be followed by correspondingly finer produce when forced. One good strong root, with well-developed crowns, will produce more in bulk and weight than several weak ones; and what is of more importance, the heads will be much finer than they otherwise would be. There is really no loss of space by giving the plants plenty of room, and by thinning out all weakly shoots in summer in order to throw strength into the main stems, and all seeds that are produced on the latter should be picked off before they get large. No one, no matter how good his appliances for forcing may be, can obtain fine heads from weakly roots; and I might almost say, scarcely any one can fail if the plants have been well prepared for forcing. When a plant or tree that is expected to produce its crop out of season has been well prepared, the work is half done. If the stock of plants be limited, unless there is a special reason for wishing to have Asparagus early, it will be better to delay forcing till the end of October or beginning of November; but with a good stock of such plants as I have endeavoured to describe, forcing may begin at any time after October 1, and in that case the first batch of plants should be headed down at once; this will give a little stimulus to the dormant buds, and will cause them to break more quickly with less artificial heat than would be necessary if the removal of the growth had been delayed till the time of lifting. It will be, so to speak, a continuation of the growing season; no doubt some little sacrifice of quality has to be submitted to, but that is inevitable with most things forced early, and there is less waste or loss in this respect in the case of Asparagus than with other matters, as the main object is to take the most of the growing power out of the plants and then throw them away. No doubt if any one chose to incur the expense Asparagus might be had all the year round, either forced or from beds in the open air, but few plants force so easily when fairly treated. There are various ways of forcing Asparagus, but the one most commonly practised is to make up hotbeds of stable manure and leaves in such proportions as shall produce a steady temperature near the surface of about 65° or 70°. This will generally be secured by building up the beds about 3 ft. high at back and 2 ft. at front, beating the material down tolerably firm so as to have a steady heat for a month or so. When the bed has reached the right temperature, and there is no danger of any serious fluctuation (which can easily be ascertained by keeping a stick thrust into the beds and watching it daily), 2 in. or so of light rich soil should be placed all over the surface, and on that the roots should be laid close together. The roots of the Asparagus should be lifted with great care, so as to avoid all unnecessary mutilation, and when carefully arranged, they should be covered with light soil thinly or heavily, according as the produce is required to be green or blanched. In the latter case 8 in. will not be too much, whilst in the former 3 in. will be ample. Whenever the weather is favourable, free ventilation will improve the flavour in the later stages of growth. Asparagus may also be successfully forced in pots or boxes; or temporary arrangements may be formed on the shelves or stages of forcing-houses, by which a good supply may be obtained without incurring the expense of hotbeds, always supposing, of course, that the space in the houses can be given up for a time for such a purpose. Where Vineries are started early, this mode of forcing might be used more than it is to supplement the hotbed system, as by improvising some temporary troughs over or close to the hot-water pipes, there would be no difficulty in getting sufficient heat to bring it on quickly enough to ensure succulency. Later in the season the permanent beds may be—and, in fact, often are—forced gently by covering them with movable frames and lights, and filling in around them with hot manure and leaves.

E. Hobday.

CARPET BEDDING.

Of all systems of flower-gardening, this is the most artificial, inasmuch as its effectiveness wholly depends upon the amount of labour bestowed on it in the way of shearing, pinching, and pegging. I admit that the best examples of carpet beds in public parks, where labour is abundant, and where there is little else to look after, is at first sight so striking that owners of private gardens resolve at once to adopt the system pure and simple, totally ignoring the fact that in the altered circumstances under which private gardens are carried on, the effect produced will be altogether different. The question as to how carpet beds are to be kept in the necessarily highly-dressed condition which they require is one of the most perplexing with which modern gardeners have to deal, for even under the ordinary system of filling beds with flowering and fine-foliaged plants, it is more the rule than the exception for the kitchen and fruit gardens to be deprived of the labour which they often urgently need. It should also be borne in mind that the forms of flower beds in public parks have been modified to suit the carpet-bedding system. Beds of simple outline are the rule, but in general the flower gardens attached to country mansions are laid out geometrically, either on the Grass, or, more frequently, as in the Italian style, in gravel and Box, with accompanying vases, scroll-work, and edgings, the latter forming the divisional lines, and the beds themselves, if filled with distinct colours in leaf and flower, making up one harmonious whole. But if we begin to subdivide each bed into separate compartments of rainbow-like colours, the general effect will be lost — nothing will be left but inextricable confusion. There may be many and glaring faults connected with the oft-derided system of the scarlet and gold of ordinary bedding-plants for furnishing geometrical gardens, but as a rule they are associated with such a wealth of foliage that it is almost impossible to over-colour a country garden. With reference to single isolated beds, I like those in Battersea Park in which handsome or stately-foliaged plants are inserted at sufficient distances apart to allow of a full view of the carpet below them. The latter should not be clipped or pegged, but left to grow as it will, thus forming a more agreeable combination than the flat, unbroken surface of the orthodox carpet bed.

Henham. James Groom.

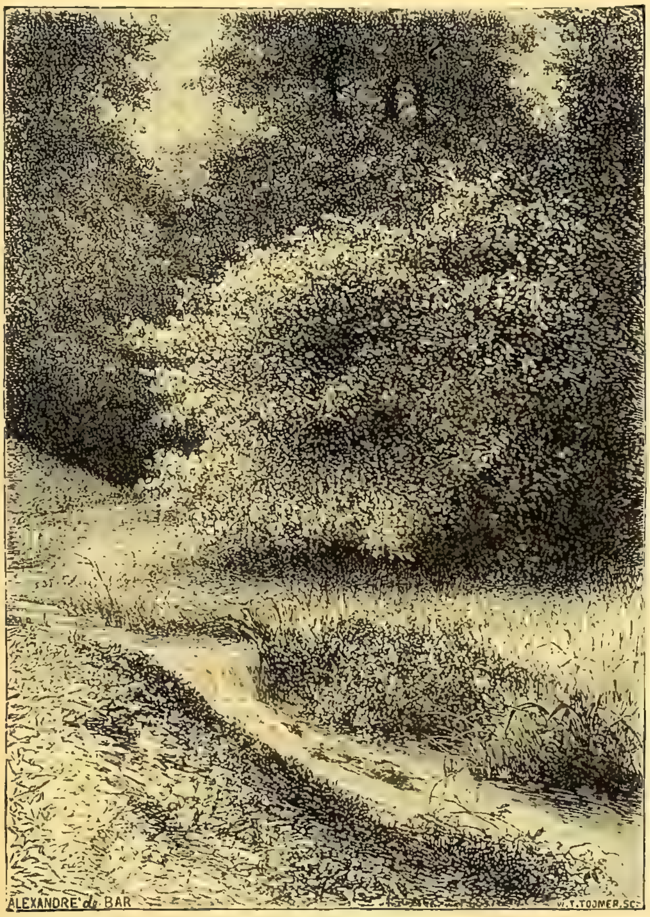
Gladioli within the Reach of All.—I send you cut spikes of a few inexpensive Gladioli in order to show what is now within the reach of every body—varieties which a few years ago were prohibitive as regards price; now any one wishing to cultivate this plant need not be deterred from doing so on account of its price, and as to cultivation nothing can be easier. When the Gladioli season is over with us, generally about the 10th or 15th of May, we trench a piece of ground deeply, manure heavily, and plant the bulbs thickly: if the weather sets in very dry, we occasionally give them a soaking with water. This season has been particularly favourable to Gladioli; they have not required any water, and for the last fortnight we have been cutting flowers two or three times a week from the same beds, and we shall go on cutting for the next four or five weeks. The importance of hardy bulbs in a decorative point of view is even now but little understood by many. Those who grow them as they ought to be grown can have Daffodils in February, and they will last till May—then Lilies afford a succession of blooms till the Gladioli come in, and these last continue flowering till the frost destroys them. Just now we have beds of Tiger Lilies in excellent condition, and our plants of Lilium auratum have been flowering since July, and they will continue as long as the weather is favourable. Lilium speciosum has also been very fine, a condition in which it will continue for some time. Autumn Crocuses have just commenced flowering, also autumn Scillas. The Colchicums are in bloom, and will continue till cut down by cold weather.—P. Barr.

The Lawson Cypress in Devonshire.—As a description of this Cypres was given in last week's Garden, it may be interesting to know its rate of growth under favourable conditions. Our largest plant is now 36 ft. in height. It was planted sixteen or seventeen years ago when it was about 3 ft. high. Two others of which I sowed the seed in 1859, are now 30 ft. in height. We have others, between 20 ft. and 30 ft., but some produce seed so freely that their growth is much checked thereby: the soil in which they are growing is a rich, light loam, resting on rock, and the situation is well sheltered on the southern side of a hill, where the drainage is naturally perfect.—J. Garland, *Killerton.*

GARDEN DESIGN.

THE GARDEN STREAMLET.

It used to be supposed and stated too frequently in books that a garden being a "work of art," there was in consequence some occult reason why Nature should be kept within very strict bounds therein. Not agreeing with this, we find pleasure in illustrating subjects that show how natural a garden may be without losing any other charm. Such scenes we only find by accident in days when a trace of any intelligible design is not evident in many of the most famous gardens. The present example is a little stream that rushes down a grassy valley. Beyond, it may be seen emerging from a wood of Pine and other trees, under the shade of which it ripples among Ferns and Sedges. There is, of course, no reason why garden streams should not be free from false lines and curves, with which they are too often associated. What a charming home such a place forms for naturalising in the Grass numerous hardy flowers, including water-side ones!



A Garden Streamlet.

RATING GARDENS.

The law enacts that the rate shall be founded upon "the net annual value" of the ratable land or hereditaments. The Parochial Assessment Act, 6 and 7 William IV., cap. 96, defines "the net annual value" to be "the rent at which the same (land or buildings) might reasonably be expected to let from year to year, free of all usual tenants' rates and taxes, and tithe commutation rent-charge, if any, and deducting therefrom the probable average cost of the repairs, insurance, and other expenses, if any, necessary to maintain them in a state to command such rent." In order to discover what the rent is, at which the property "might reasonably be expected to let from year to year," the place itself, and not the acts or desires of landlord and tenant, must be chiefly considered. The test is, not what rent is actually paid, but what in the opinion of persons in general is the market value per annum of the property in question. A landlord, out of feeling of relationship or friendship, might be willing to accept an almost nominal rent from one particular tenant; or, another tenant might for some special reason be glad to pay a fancy price for the same premises. In neither of these cases would the rent be of that reasonable kind contemplated by the framers of the statute. In the former instance the sum paid per annum would only be a portion of the reasonable rent, while in the latter only a portion of the sum paid would be rent at all, the rest being a kind of premium voluntarily paid by the tenant by reason of the premises being of exceptionable value to him. In neither case could the rate be calculated from the rent actually paid. It will be observed that the statute requires the rent to be such as could be reasonably expected from year to year, and not for a term of years. In the case of Staley *v.* Castleton, Overseers, the facts were that a silk mill was closed in consequence of the depression of trade. The owners of the mill appealed against the rate. Mr. Justice (now Lord) Blackburn decided that the rate was to be made upon the estimate of rent to be expected reasonably. A tenant would give nothing for it as a silk mill just then. Things might improve, and a tenant might be found who would take it for a term at a larger rent, but that was not the calculation intended by the Act. Again, in the case of the Attorney-General *v.* Lord Sefton, it was held that duty did not attach to land that was unproductive at the time the defendant succeeded to it, though it might become very valuable in the future. Again, it was held in the Tyne Coal Company *v.* Wallsend Overseers that the colliery, which was drowned out, and had been so for six years, must be rated at its value from year to year as it was then, and not as if it were a going concern. In each of the cases cited above, the property had depreciated in value through no fault of the respective owners. In other words, the rate was to be calculated according to the present, and not the prior, nor future, nor speculative worth. In the case of Harter *v.* Overseers of Salford, Mr. Justice Crompton said—"If the premises are unletable, they are not ratable; but if they are unlet merely because the owner stands out for a higher price (*i.e.*, one above their reasonable value) they are liable to be rated at a fair rent." In the same case, Mr. Justice Blackburn laid down that where premises are to be let, and are not *de facto* let, in practice they are empty, and not considered ratable. But when the landlord retains possession, and has actually some beneficial occupation, he is ratable, at least, to the extent of that benefit. No exact case is recorded of appeal upon rating of an unproductive nursery greenhouse, forcing frame, or Vinery; but the cases above cited seem to point that the same principles should apply to this sort of property as are laid down in Staley's case, and in that of the Tyne Coal Company.—"Gardener's Chronicle."

Islets of Forget-me-Not.—The islet of Forget-me-Not in the canal in Rollisson's nursery at Tooting is a pretty and a very suggestive object. It is made up of a few large flakes of the common Forget-me-Not thrown on a rough piece of board, which forms a raft for it. In outline this is so irregular that no one suspects it to be anything else than a charming little island of Forget-me-Nots. This plan would in some places be found useful in preventing the plant being overrun by coarser vegetation, and in allowing it to be seen in greater mass and floating on the water instead of growing on the bank. In forming such rafts, other plants might easily be mixed with it, such, for example, as the North American Pitcher Plant, which is perfectly hardy. The little white Bog Arum would be pretty in such a position. Treating aquatic and bog plants in this way is one of the best methods of adding to the interest of a garden. Justice has never yet been done to aquatic and bog plants in any garden which we have seen. The various pieces of water in Rollisson's nurseries offer the best opportunities for cultivating aquatic plants, which we hope may be taken advantage of to the fullest extent, as we fancy hardy aquatics will one day be more used in garden decoration than at present.

An Indian Versailles.—Having spent a quarter of a million in the erection of the palace of which the Prince of Wales was the first occupant, Sindia, the Maharajah of Gwalior, is surrounding it by a garden which promises to be "a wonder of the world." The architect of both, Major Michael Felose, C.E., is happier in the control of countless lakhs of rupees than most of his Western brethren. In the paradise or pleasure-park around the palace he is accordingly raising ten garden houses, each of a separate variety of Hindoo architecture, yet all harmonious, and a winter glass palace imported from Vienna. Artificial lakes he is connecting by fine bridges, so arranging the water as to cause it to rush with a sound that will cool the ear as well as the eye. The houses are built of and roofed with enormous blocks of white sandstone. The path is to be paved with the marble of Jeypore. The water for the lakes is brought in 3-ft. sandstone pipes a distance of sixteen miles.

A "MODEL DOCKYARD."

Judging from the heaps of Docks one everywhere sees so carefully stored up in some nook or another, one would be inclined to think that cultivators considered this a model mode of dealing with what the very action itself shows is deemed to be a great nuisance. Now, as we have this very morning been occupied in analysing some of these "model Dockyards," we make no excuse for a few words in explanation of the results of our deliberations. We would first notice that the district in which our observations are made is one composed of stone-brash of the inferior oolite and inferior oolite sands, all more or less light soils. Docks, however, are common to both heavy and light lands, and the same species are everywhere; the other plants would vary according to soil and situation.

Model Dockyard Weeds, Aug., 1877.

Botanical Names.	Common Names.	No. 1.	No. 2.	No. 3.	Remarks.
Rumex crispus	Curled Dock............	—	—	—	The most abundant.
,, acutus	Pointed-leaved Dock	—	—	—	Not so common.
,, obtusifolius	Blunt-leaved Dock...	—	—	—	Common.
Chenopodium album	Fat Hen, Goosefoot		—	—	Common to rich soils.
Papaver Rhœas	Common red Poppy		—	—	Everywhere on light lands.
,, dubium......	Long-headed Poppy		—	—	Occasionally on heavier soils.
Senecio vulgaris	Groundsel..............			—	Common.
Chrysanthemum segetum	Yellow corn Marigold		—	—	On the sandy soils very common.
Lavatera arborea ...	Tree Mallow			—	Escaped from cultivation.
Datura Stramonium	White Thorn-apple			—	
,, Tatula	Purple Thorn-apple			—	
Avena fatua	Wild Oat		—	—	Common to the district.
Alopecurus agrestis	Black Bent		—	—	The "Black Couch" of the district.
Agrostis alba	Squitch		—	—	The common Squitch Couch.
Corn	Wheat, Barley, Oats		—	—	From the farmyard.

Now, here we have noted the weeds observed on three separate heaps, probably some half a mile apart.

No. 1 is the true model Dockyard; it was made as follows:—Dock roots were picked up from the field some two years ago, and put up neatly by the side of the road, with the avowed object of letting them rot. Well, the result has been that, while some of the young plants in the bottom of the heap have really gone to mould, those at the top have grown and rooted in the mould below, with the result that different plants of Docks on this very heap have singly produced 28,000 seeds this year. Many seeded the first year, and even then the model Dockyard was fully established! But what a store of seeds is now concentrated on that same heap! Now, if we ask what is to become of such a heap, we shall find that the practice is to pull up the Docks after they have seeded, and cart away the rotted materials, of course with the scattered seeds, to the land, in which case we need not be surprised to find a thick crop of young Docks, to follow perhaps upon the very piece of land from which we had so carefully abstracted their parents. Still, sometimes it will be the case that such heaps are not removed for years; then the seeds are gradually scattered abroad from this centre by wind, birds, or sheep straying along the roads, by all of which means a pest of this kind is, though sometimes slowly, yet surely spread from a common centre.

No. 2 is an ordinary roadside manure-heap, and contains, in addition to Docks, other weeds of the district. This was carted from the cattle-sheds, and the weeds upon it are just those from the hay, especially seed hay, or brought in the litter. This is the second year in which we have observed this heap. It was the other day covered with Docks hastening to seed. These, however, have been all pulled up since, or enough Docks would have been spread with this manure to crop the land over thickly.

No. 3 is a heap made up of the sweepings of the farmyard. This is particularly interesting, as showing how strange plants may be distributed, so as in time to add to our native weed-list. The source of these weeds is as follows:—The Datura being cultivated for medicinal purposes, its seeds have been scattered about the yard to which it has been brought for the purpose of being packed. The Tree Mallow is growing in the garden which opens to the yard, into which the ripened seeds are continually falling. Now, as these have been swept to the heap from the yard with the commoner weeds in the list, it will easily be seen how such weeds may be taken to the farm; and, indeed, it is by no means uncommon to trace these three foreigners into most of our arable fields. Now, when any of our common weeds may be suddenly found to spring up in a field to a more than ordinary extent, it is said to be "natural to the land;" but such cannot be said of these foreigners, and hence they may serve to show the means whereby weeds extend. The fact is they are really cultivated. Even our model Dockyard is seen to be a means for spreading the Dock, and somehow or other it will be found that, when weeds of any kind appear in greater quantity than usual, it will be because we have sown their seed.—"Field."

Carnations from Cuttings.—It does not seem to be generally known that Carnations, Picotees, and Pinks may be struck like Pelargoniums and quite as easily. Some writers I see still advocate the old system of layering, an operation which entails a large amount of labour, patience and time, requisites that every one does not possess, especially amateurs. First of all, let us get rid of the idea that dead or decayed leaves, &c., must be removed, except for neatness sake. To be told, too, to remove the old surface-soil, and replace it with equal parts of turfy loam, leaf-mould and clean sand, which must be well mixed and passed through a fine sieve, and to cut Fern leaves for pegs, is certainly going a long way to make flower-growing tedious and distasteful, especially to those who have everything to buy. My method is very simple, and although Carnations are subject to great ravages by wireworms (of which my ground is full), I seldom lose one out of every dozen cuttings put in. I take a piece of ground to make a bed 4 ft. wide, dig and manure it, also rake the surface fine to give a neat appearance. In October I take pipings either cut or drawn from the parent plant, and with a small stick dibble them in, and water to settle the soil, after the manner of putting in Pelargonium cuttings; there I leave them until bedding out time next May, when I take them up and replant them where I wish to make a show. Now some may say it is too late to replant in order to have a good show of flowers, but by planting them in rather rich soil, I find them to flower quite as well as those layered and planted in October. For a front row, to cover the bare stems of standard Roses, or for the centre of a large bed, nothing can be better. In the same manner I strike Viola Blue Perfection and Yellow Violas (only put in in September), and find them to strike freely.—W. V., *Northwich.*

SCENT-YIELDING PLANTS.

By G. W. SEPTIMUS PIESSE, Ph.D., F.C.S.

Mints.

The plants included in the genus Mentha are nearly all highly aromatic, containing in their leaves a very pungent volatile oil or otto. The kinds best known are the Peppermint, Pennyroyal, and Spearmint. Of these the Peppermint is that which now most concerns us. Some of the fairest fields in Surrey—those in the neighbourhood of Mitcham, Carshalton, Beddington, Sutton, and Wallington—are devoted to the growth of Peppermint. Nearly all this district occupies a plateau surrounded in the distance by hills, and Waddon Marshes being in its centre, well indicate the general run of the soil, which, with plenty of sand, just suits the growth of Peppermint. The plants are readily propagated by dividing the roots, which are planted 1 ft. apart each way. This is done in April, and great care is taken to prevent weeds from growing amongst them, so as to ensure a pure sample of oil. The fields are ploughed up and the crop changed about every five years; little else is used in the way of manure besides the spent herb from the stillhouse, which is put on the land in spring, after having had about half a year to ferment and decay. Peppermint is also largely grown in North America in New York County, Ohio, and in St. Joseph's County, Michigan, as well as in Strathroy, in Canada. The oil imported from these countries finds a ready sale in London, and thence it is sent to Northern Europe. In dealing with a subject of which Parliamentary Blue Books take no cognizance, it is difficult to fix statistically the quantity of oils obtained annually, but I should say that not less than 33,000 lb. of it are produced in Surrey alone. The best English oil has an average value of, say 30s. per lb., but the American and Canadian oils only realize about half that sum, a circumstance to be attributed not so much to climate or the quality of the plant itself as to weedy cultivation. Weeds get carried into the still with the Peppermint, and as many of them yield an oil, the true Peppermint oil thus becomes deteriorated. In Surrey two varieties of Peppermint are grown—technically known as White Mint and Black Mint. The Mint harvest, as a rule, begins about the third week in August, and all is not garnered until the end of September. During this interval the stills are worked night and

Black Mint.

White Mint.

day without cessation, Sunday excepted. The Mint is cut with a sickle or scythe, and is left to dry on the land; it is then tied up into "mats" of, say 56 lb. each, and taken to the stillhouse. About sixty mats, or over 3000 lb. weight of crop are produced by each acre of land. In Surrey there are about 1200 acres under Mint alone, namely, 500 acres of White, and 700 acres of Black Mint. The White kind yields, on an average, 24 lb. of oil to the acre, say, 24 × 500 = 12,000 lb., which, at the very low price of 30s. per lb., shows a value of £18,000. The Black Mint, which yields more oil than the White, averages some 30 lb. to the acre, but it has a lower market value, say 25s. per lb.—30 × 700 = 21,000 lb.; this gives a value of £26,250, or a total of £18,000 + £26,250 = £44,250. These figures surely ought to induce young emigrants to some of the British Colonies to commence without delay the culture of scent-yielding plants. The White Mint is more susceptible of injury from spring frosts and summer droughts than the Black kind, hence both are grown in order to make sure of a crop of some kind. The operation of distilling is simple enough; it consists of boiling the herb in water, and passing the steam generated through a hollow wormed pipe placed in a vat of cold water; the oil rises with the steam, and is condensed in the worm, falling out at the end into a receiver; the oil floats upon the water, and is ladled off from time to time. "A charge," as it is termed, for the still consists of twenty mats of 56 lb. each, or half a ton of Mint, and about 70 gallons of water. It is then boiled slowly with a steady fire for seven hours, at which time all the oil is out of the Mint; the still is then emptied by means of a tap of any water remaining, and the spent Mint is forked out of the alembic, an hour being allowed for this work and to effect another charge. Three charges are thus worked during the twenty-four hours, or what is equivalent to the product of an acre of land. Persons interested in scent-yielding plants are welcome to inspect the stillery of Piesse & Lubin, Mitcham Road, Croydon. At this time of the year—August and September—the stills are mostly employed in working Camomile (of which a good deal is cultivated at Beddington), Pennyroyal, Lavender, and Mints; at other times they are used for distilling Caraway seed, Cedar and Santal wood, Cloves, Patchouly, Thyme, &c.

Hughenden House, Chiswick.

[In order to determine correctly the names of the Mints mentioned above we sent specimens of them to Dr. Boswell, of Balmuto, Kirkcaldy, author of the last edition of English Botany, and the following is his reply:—"The two Mints you sent me from Messrs. Piesse & Lubin are both forms of the Peppermint (Mentha Piperita), judging from the flower-spikes. The White Mint is nearest to the form known as Mentha Piperita officinalis, and the Black Mint to M. P. vulgaris."]

Top-dressing Seed-bearing Cucumbers.—For several years I have had much difficulty in getting Cucumber plants to hold on sufficiently long to fully ripen a crop of seed fruit, the strain upon the plant being much greater where numbers of large fruit are left to ripen than is the case where the fruit is cut as fast as it becomes large enough for table. The difficulty to be surmounted has been a strong tendency on the part of the plants to shank off just on the surface of the soil, and altogether collapse in a few days. Last year I adopted the plan of surfacing the soil with a good dressing of short stable manure with good results, as much fewer numbers collapsed. This summer after the plants were well established, I procured a quantity of road manure with which there was a considerable amount of grit; into this I found the plants rooted freely at the joints, which kept them fresh and vigorous, and they matured a good crop of seed fruit. In pulling up the plants I found that in several cases the main stems were quite decayed, but that the joint roots had kept the plants alive. Nevertheless these have produced a crop averaging ten seed fruits each, all large and plump, and as good as could be desired.—A. D.

"**Grass Nuts.**"—In a list of plants eaten by the Californian Indians, we observe this name applied to the Brodiæas and other plants now well known in English gardens. "There is the Beaver-tail Grass Nut (Cyclobothra), the Turkey Pea (Sanicula tuberosa), the purple-flowered Grass Nut (Brodiæa congesta), the tule Grass Nut, a small bulb growing in wet places; the climbing Grass Nut (Brodiæa volubilis), sometimes planted for ornament; the little Soap-root (Chlorogalum divaricum), the wild Garlic (Allium), the eight-leaved Garlic, and several others; the Yellow-blossomed Grass Nut (Calliproa lutea), and several other Grasses of this kind. There is one other Grass Nut worthy of mention, with a black bulb (Anticlea), which the Indians consider poison, although it probably contains no more poison than other members of the Liliaceous kinds."

Canned Indian Corn.—More than 5,000,000 cans of "corn" are now packed in Maine annually, and sold in various parts of the world, giving employment to from 8000 to 10,000 persons during the packing season. The corn in this case means Indian Corn of a peculiar variety, gathered young, and preserved in tins. It is now often seen in London shops. We ought to grow the plant for use in the green state.

THE FRUIT GARDEN.

FRUIT GROWING IN KENT.

From the "Royal Agricultural Society's Journal."

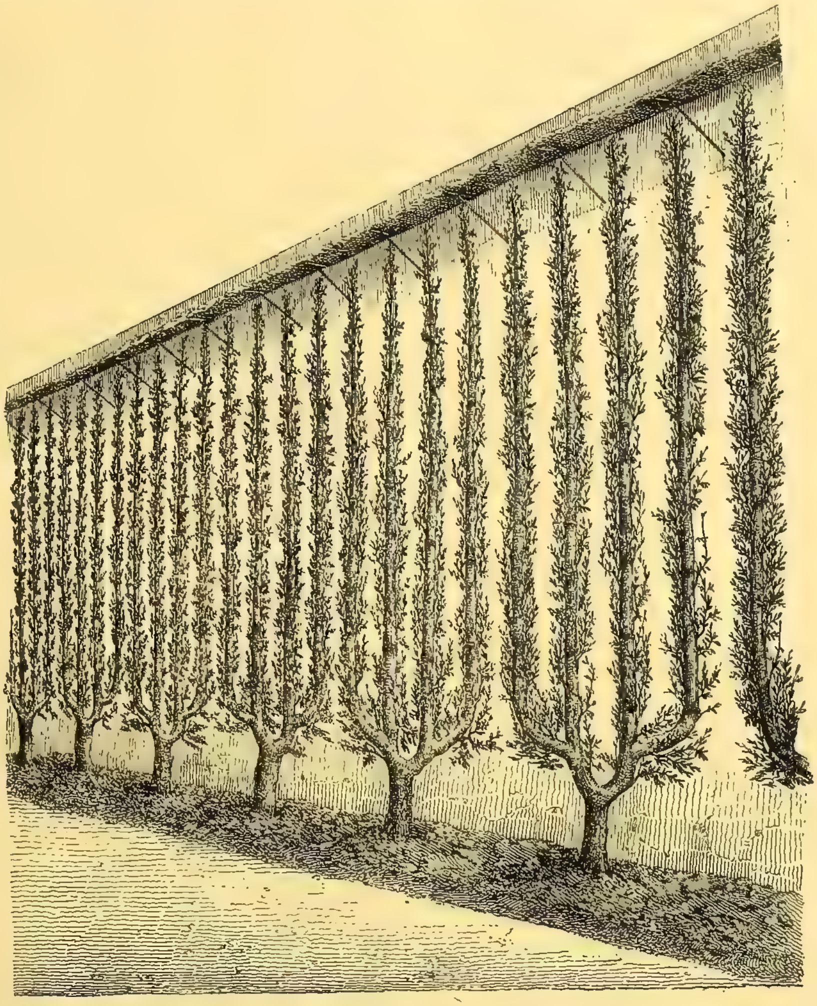
Kent has been celebrated for the production of famous fruit for several centuries. Drayton, in the first decade of the seventeenth century, thus apostrophised the county, in his quaint "Polyolbion":—

> "O, famous Kent!
> What country hath this isle that can compare with thee,
> Which hast within thyself as much as thou can'st wish?
> Thy conyes, ven'son, fruit, thy sorts of fowls and fish:
>
> . . . .
>
> Whose golden gardens seem th' Hesperides to mock:
> Nor there the Damson wants, nor dainty Apricock,
> Nor Pippin, which we hold of kernel fruits the king,
> The Apple Orange; then the savoury Russetting,
> The sweeting for whose sake the plowboys oft make war."
>
> . . . .
>
> And sundry other fruits, of good yet several taste,
> That have their sundry names in sundry countries placed."

Fruit lands—orchards—are frequently mentioned in charters or deeds granting or conveying lands in the reign of Charles the First and James the First, in various Kentish parishes where fruit is now grown. Lambarde, in his "Perambulation of Kent," says that King Henry the Eighth's fruiterer planted at Tenham in 1583, "by his great coste and industrie, the sweet Cherry, the temperate Pipyn, and the golden Renate," having obtained the "plantes from beyond the seas." Since the time of Lambarde's work the area of the fruit plantations in the county has varied considerably, to a certain extent according to the profit made from the cultivation of Hops, which were brought from Flanders in the sixteenth century. When Hops paid well, fruit trees were grubbed up and Hops were planted in their stead. When Hops did not pay, fruit trees were substituted for these more speculative plants; and this alternating process has been continued up to recent times. Hasted, in his "History of Kent," published one hundred years ago, remarks of certain parishes in East Kent, that "there were large plantations of fruit till they were displanted to make room for Hops, which are found to thrive well in old orchard ground." He adds, "Orchards are beginning to be planted again in consequence of the low price of Hops." The climate of Kent is temperate, and in most seasons the common fruits ripen well; the mean temperature of the three summer months is about 61°, and that of the three winter months about 38°. The average annual rainfall is about 26 in. There is strong evidence that the climate was more genial in earlier times, as Grapes were largely grown, and ripened out-of-doors, and wine was regularly made from them. Mention is made of Vineyards—vineæ—in the records of the survey of Domesday, taken in the early part of the eleventh century. In the reign of Edward the Second, when that king was at Bockinfold in Kent, presents of wine and Grapes were sent him from the Vineyards near Rochester. Hasted states that he "knew two exceedingly fine Vineyards in the county, one at Tunbridge Castle, the other at Barming, from which quantities of well-flavoured wine had been produced." In the parish of Hunton, at Buston, the former seat of the Fane family, there are remains of an old vineyard, and three distinct terraces rising above each other may be traced. These are faced with brick walls, and are protected from the north by a hill. This is called the "old vineyard" to this time, and fine fruits of many kinds are grown in great abundance on the rich soil of its sheltered slopes. It very seldom happens that Grapes ripen thoroughly in these days, even in the hottest summers in the most sheltered spots in the county, or that Grapes are grown out-of-doors at all fit for making wine. Grapes cannot be produced fit for wine-making purposes unless the summer temperature exceeds 64°. Humboldt, the authority for this statement, wrote:—"Taking an example, for instance, from the cultivation of the Vine, we find that in order to procure *potable* wine, it is requisite that the mean annual heat should exceed 49°, that the winter temperature should be upwards of 33°, and the mean summer temperature upwards of 64°." From the fact that Grapes do not ripen now in Kent as they did four or five centuries ago, it must be inferred that the climate has undergone a change, that the mean summer temperature has gradually been lowered. This may be the reason why the old sorts of Apple, the Ribston and Golden Pippin, and other more delicate sorts, do not thrive as well as those of later origin, and more to the manner born. It is suggested that this slight and gradual change in the climate of Kent is due in some degree to the clearing of the forests, with which parts of Kent were formerly covered; such as the great Forest of Anderida, which extended from Lympne through the Weald of Kent into Hampshire, and Saenling Forest in the extreme east of the county; with other forests, described by Mr. Furley in his 'History of the Weald,' that have been grubbed since the Saxon period. Mr. Furley mentions that the Isle of Thanet, now an open tract of fine arable land running out to the North Foreland, was formerly covered with timber. The removal of these great forests and woods, which has gone on steadily since the date of Magna Charta, has let the cold wind and sea breezes from the north-east and the south-east, sweep directly over the unsheltered land, chilling the air and lowering the temperature. Although Humboldt held that extensive forests are among the causes tending to lower the temperature of a district, it by no means follows that their clearance would ensure an increase of temperature. Dr. J. C. Brown, in his recent work entitled 'Forests and Moisture,' has shown that disforestation makes a country more dry, and that planting gives a country humidity; but he has not shown that a climate has been altered in respect of heat or cold, in its mean summer temperature, either by disforestation or by the planting of trees. Fruit-plantations and orchards in Kent have been planted and replanted, grubbed and re-grubbed, most promiscuously during the 300 years preceding this generation, to make way for Hops when that very uncertain crop was profitable, as well as after successive large growths of fruit, which from the then comparatively limited demand, and the heavy costs of conveyance, barely paid expenses. Foreign competition, it is true, was insignificant, with regard to soft fruits, as Cherries, Gooseberries, Currants, until within the last forty years; yet there was no trade with the thickly populated towns in the north of England and in Scotland, until railways had made the carriage of goods cheap and expeditious. Since the development of the railway system, there have not been such capricious alterations in the fruit-growing acreage, which has been steadily increasing.

In the parts of the county suitable for fruit-growing, almost all the farms have a certain proportion of fruit-land, as a hedge against the contingencies of Hop growing. The profits of fruit-growing are not so large as those of Hop-culture in good seasons; on the other hand, the chances of possible losses are not nearly so great. Men may make or lose fortunes by Hop-cultivation; but fruit land of fair quality will show a steady remunerative return upon an average of many years. During the last ten years much land has been planted with fruit in the north-western part of this county, between Orpington and Crayford. Large woods of poor quality, which grew Birch, Beech, and other trees of low value, have been grubbed there, and planted with Plum, Damson, and Apple trees, Gooseberry and Currant bushes, Raspberry canes, and Strawberry plants, which pay well, especially the last named, as the distance from London is short, and the fruit can therefore be sent in fresh and early to the markets. In the Weald of Kent, also, where Apples alone were grown until quite recently, Black Currants, Gooseberries, and Plums have been, and are now being, planted to some extent. Fruit of various kinds is also cultivated throughout the country by persons who have a few acres planted with fruit trees, and who are, as a rule, a most industrious and prosperous class; as well as by cottagers in their gardens. In good seasons a few Apple or Plum trees, or some rows of Gooseberry or Currant bushes, help materially to pay their rent. A garden of this kind, well stocked with fruit trees, has often been the means of giving an industrious labourer a rise in position. Fruit is grown mainly in three particular districts of the county, situated in East, Mid, and West Kent, whose respective areas are determined in a degree by geological conditions. In the first-named district fruit is cultivated in the parishes lying between Boughton-under-Blean, to the west of the city of Canterbury, and Rainham, a few miles east of the city of Rochester.

Lambarde has it that there were thirty fruit-growing parishes here, but there are hardly so many in these days. Cherries are grown here in large quantities; in fact, this is the Cherry garden of England *par excellence*, though other fruits are grown and the acreage of mixed plantations is constantly being increased. The soils upon which the greater part of the fruit is grown in this part of East Kent are clays and loamy clays of the Thanet beds; the "plastic clays" of the Woolwich and Reading beds, and of the Oldhaven beds, as at Selling. These all crop up variously in this locality, and overhang the chalk, whose hills form the range known as the "back-bone of Kent," stretching through the whole upper part of East Kent, through North and West Kent. There is an almost continuous stratum of the Thanet beds above the chalk from Rainham to Sittingbourne, upon which the fruit is principally grown. Between Sittingbourne and Boughton Blean, the limit of the fruit-growing line, the Woolwich beds—the middle division of the lower London Tertiaries—appear in alternation with the lower series of Thanet beds. To these formations the upper parts of East Kent owe their fertility. Upon these most of the orchards, plantations, and Hop grounds are situated. A small proportion only is placed directly on the mere surface-marls of the chalk. In Mid Kent the fruit plantations are upon the Hythe beds of the Lower Greensand. The best and most productive soil is the clay loam on the beds of "Kentish Rag," in the neighbourhood of Maidstone, upon which all fruit trees do well. Mr. Topley comments as follows upon this:—"The most fertile district of the Hythe beds is that near Maidstone. Enormous quantities of Hops are grown here, and also Filberts and fruit." Fruit is grown also upon the lighter and "stone shattery" soil of the Hythe beds, but the greater bulk of it is produced upon the ragstone soil which is undoubtedly, as Mr. Topley suggests, more fertile in the neighbourhood of Maidstone than elsewhere. The Thanet, and the Woolwich and Reading beds are found in the third fruit-growing division of the county; by their super-position over the chalk, making the district eminently suitable for the production of fruit. It is curious to note how sharply the fruit-growing line is defined here, and how perfectly concurrent it is with the outcrop of these beds, running from Halstead, near Sevenoaks, to Chelsfield, then, after a break, to Orpington, and on through the Crays. Until quite recently, Apples were the only fruit grown in the Weald, though in the last ten years other fruits have been cultivated. In the term "Weald," as locally used, the whole of the district in Kent "under the hill," or southward of the Lower Greensand formation, is included. Geologically, it comprises the Weald Clay and the various sands and clays of the Hastings Sand. Fruit does well on the former, as at Marden, Staplehurst, and Cranbrook, and upon the Grinstead Clay of the latter formation, as, for instance, at Brenchley and Horsmonden. An improvement has taken place in the management of fruit-land in Kent during the past twenty-five years; and at the same time greater facilities of transit and a steadily increasing demand have led growers to add largely to their plantations. This is proved by the Agricultural Returns for 1875, which show an increase of 846 acres in 1875 over the returns of 1874; the acreage of arable or Grass lands used for fruit in Kent being 12,032 acres against 11,186 in 1874. Foreign competition has assumed enormous proportions, and is becoming more formidable each year. This has stimulated Kentish producers to pay greater attention to the cultivation and management of fruit-land, as well as to the selection of better and more attractive sorts. In those parts of the county where the soil and climate are suitable, the production of fruit is very great and the quality is for the most part good. The area, however, of land that is specially adapted to the successful growth of fruit is limited and confined, as has been shown, to a few districts sharply defined by peculiar geological features. Situation, or the "lay of the land" as it is called by the natives, has also its influence in deciding whether land is fruit-land proper, just as in Hop-growing certain aspects and position are essential, *cæteris paribus*, to constitute really first-rate, "lucky" Hop-land.



Wall of Peach trees in the Potagerie at Versailles, engraved from a photograph taken in April, 1877, by Jules Lemercier. Showing the trees when in flower and before the young shoots begin to cover the surface between the erect branches. The trees are protected from frost during the flowering season by a straw mat temporarily fixed on the top of the wall. These trees, having vertical shoots, are quickly and easily formed. The wall is perfectly covered with the trees as shown in the engraving, in which no alteration from the photograph whatever has been made.

Though a certain amount of improvement has taken place in the methods of fruit-culture, there is much still to be done as regards the methods of planting, the actual cultivation, and the pruning of the trees. The delicate and important operation of pruning, which makes all the difference between high and low production, is, it must be confessed, but imperfectly understood by Kentish fruit growers, and their tree-cutters or pruners. Instead of the careful selection of the wood most likely to bear fruit—in place of a *raison d'être* applied to every stroke of the knife—the typical tree-cutter hacks and slashes away ruthlessly, aiming principally at obtaining a symmetrical cup-shaped form rather than at retaining the wood most likely to bear fruit. He is paid by the tree, and cannot afford pauses for reflection as to individual shoots or buds, like the careful interested pruners in France and Belgium, or like some of the best English gardeners. He and his employers have certain rough-and-ready formulas which guide the knife, as for example, "Black Currants bear on this year's wood, therefore all old wood should be cut away;" and the general idea pervading the mind of the pruner is that he cannot cut Black Currant bushes too hard. In the case of other bushes —Red Currants, for instance—the fruit is for the most part developed on the old wood, therefore all young shoots are religiously excised. There is this to be said, that where a grower has 40 or 50 acres of fruit, it would be practically impossible to give each tree, each shoot, each bud the individual attention that is given to the cordon-trained trees of Mid-central France. With regard to Apple trees, their pruning is performed in the most desultory manner. In many cases they have not been pruned for generations, and are overgrown with unproductive branches. Now and then it happens in some orchards—to use the graphic words of a correspondent —"that an ordinary workman is sent in with a saw to cut the Apple trees, and is expected to earn more than his money in faggots." It was formerly the prevalent notion, still holding to some extent, that fruit trees require but little manure. Apple and Cherry orchard-lands were mown or fed off with lean sheep year after year, with the result that the trees only bore a crop once in two years, and the fruit grew small by degrees and beautifully less. The owners of the celebrated Cherry orchards in East Kent have found out the folly of starving the trees. For the last few years they have manured the land liberally with manure brought from the London stables and cow-sheds, which has largely increased the quantity and improved the quality of the fruit. Sheep fed with corn and cake feed off the Grass, and it is now quite the exception to mow orchard-land. The cultivation of fruit affords constant work of a comparatively pleasant and easy nature to very many hands throughout the summer. Picking all fruit but Apples is usually done by women, who are paid by the day, or by the sieve or bushel and who earn from 1s. 6d. to 2s. 3d. Packing is performed by careful men, who arrange the fruit in sieves so that it may appear to the best advantage, covering it with paper, dried Grasses, or Fern leaves, and fastening it down with transverse sticks laid across. The East Kent growers send their fruit by rail and steam-boat to London. Nearly all the fruit grown in Mid Kent is forwarded by rail. In a good year the railway stations in the chief fruit-producing localities are thronged with vans laden with fruit, from the early green Gooseberry season, in May, until the Apples have all been gathered, at the end of October. Many of the West Kent growers, being near London, send up their fruit by road. As a rule, the best fruit is sent to Covent Garden—"The Garden," as it is styled —to the Borough, and Spitalfields Markets. Very choice fruit, however, generally finds its way to Covent Garden. A large proportion of the fruit is consigned to salesmen, who first satisfy the requirements of fruiterers, greengrocers, and "costers," for retail purposes. Afterwards the agents of large jam and preserve manufacturers at Liverpool, Manchester, Birmingham, Glasgow, and other towns, buy enormous quantities; the inferior and damaged qualities go to smaller houses for smashing up into a heterogeneous mass, named in accordance with the demand. In some cases Strawberries, Raspberries, and Currants are sold by the growers to contractors by the ton. To give an idea of the extent of jam-making, the "Liverpool Courier" stated lately that at a manufactory at Bootle about 15 tons of preserves are made in one day in a good fruit season. The large towns in Scotland chiefly take Damsons, Black Currants, and Warrington Gooseberries. It might be supposed that Kentish fruit-growers, only forty miles distant from London, would not be affected in any great degree by the competition of foreigners in the matter of soft fruit, *i.e.*, fruit of a perishable nature, as Gooseberries, Raspberries, Currants, and Strawberries; yet, as a fact, the cost of carriage of a ton of fruit from France to the London Docks is no more than from Maidstone to the London markets. Rents and labour are cheaper in France and Belgium, while the climate of the former country is far more suited for the production of fine well-flavoured fruits than our own. M. Bréhaut remarked upon the point that "in making any comparison between the state of fruit cultivation on the Continent, as compared with that in England, it must always be borne in mind that much of the land devoted to the purpose is, as regards climate and soil, the best in the world." Continental growers are able to send fruit to London earlier than the home producers. They send Strawberries, Cherries, and other fruits in quantities, and "take the edge off the appetite of the people," to use the forcible remark of a worthy salesman, "before Kent Cherries are fit to eat." There is, however, the solatium that if Kent growers do not get the first "pull," they have the field pretty well to themselves for a time, after the foreign soft fruit season is over, before the Gages, Plums, Apples, and Pears are ripe. Still, in spite of all the advantages possessed by the "foreigners," their fruit is not so good, taking it generally, as that grown in Kent, which is acknowledged to be, on the whole, better than any other that comes to London. Fruiterers and salesmen say that the foreign fruit has much improved in flavour and size, and is steadily improving, while the imports are increasing year by year, as may be seen by the returns of the Board of Trade, which show that the total amount of "raw" fruit imported into England in 1875 had reached the enormous amount of 2,220,412 bushels, as against 1,128,568 bushels in 1871. France sends Strawberries, Cherries, Red Currants, Gages, Plums, Pears, and Apples; and sent to this country 581,170 bushels of "raw" fruit in 1875, against 354,606 bushels in 1871. Plums and Currants arrive from Belgium and Holland. Apples and Pears are imported from Spain. Immense quantities of Apples come from America, of fine quality and flavour, almost equal to Ribston or Cox's Pippins in good seasons. These arrive generally in excellent condition, being packed in barrels like oil-cake; and they interfere much with the price of Kentish Apples. For example, last year, Newtown Pippins of splendid appearance and excellent quality were selling at rates which materially depreciated the value of the best Kent Apples, of which the crop was very small. There can be no doubt that so long as sugar continues to be cheap the demand for fruit will be, as now, enormous, and will probably absorb even a largely increased supply. At the same time, such large additions are being steadily made to the home and foreign plantations, that Kent growers, though they plant on, do it with a degree of anxiety which makes them, and ought to make them, most careful in their selection of proper kinds of fruit for their new plantations, as well as in the renovation and cultivation of those that have been long established.

Having glanced at the history and conditions of fruit-growing in Kent, it will be well to describe the methods of cultivation usually adopted. Two principal systems or methods of planting fruit prevail in Kent: one according to which it is intended that the land under the standard trees shall be eventually laid down with Grass; the other, where the land will always be cultivated and kept constantly filled up with fruit trees, and bushes under the standards or half-standards. East Kent growers for the most part adopt the former method, because it is not good for Cherry trees that their roots should be disturbed after a certain time. The standard trees are planted first on well prepared arable land, with Hops or fruit bushes, which give a return until the standards come in. When these have arrived at a good size the Hops and bushes are taken away and Grass seeds are sown. Apple orchards are occasionally formed in this way; but Apples are generally grown on the other system—in permanent plantations set out and planted with Plums, Damsons, Gooseberries, and Currants (and Filberts in some parts of the Mid Kent district), which are renewed from time to time as occasion requires. In an orchard which is eventually to be laid down with Grass, the standard trees, if Cherry trees, are set from 24 ft. to 33 ft. apart each way, giving from forty to seventy-five trees to the acre. If Apples be planted they are set about the same distance apart. Plums or Damsons are very often put between the Apples or Cherries, and are taken out when they get in their way. In a plantation that is to be permanently cultivated, the Apple trees are set about 30 ft. apart. Plums or Damsons would be set in between each Apple tree, and Gooseberries or Currants between the rows, 6½ ft. apart, so that there would be forty-four Apple trees, forty-four Plum or Damson trees, and 1031 bushes on each acre. Where Filberts are grown under Apples, they are usually planted about 13 ft. apart, which would give about 257 trees to the acre, and Plums or Damsons are not generally planted in this case. The cost of preparing the land and of planting it as a mixed plantation, with all incidental expenses, varies from £16 to £20 per acre, according to the sorts and number of trees planted. Apple trees cost 1s. 6d. each as an average. Plums and Damsons 1s. each. Filbert and Cob trees 4d. each. Gooseberry and Currant bushes from 10s. to 14s. per 100. The annual average cost of cultivation, including rent, interest on outlay, tithes ordinary and extraordinary, rates, maintenance, and other expenses, exclusive of all charges connected with picking and selling the crop, which would, of course, depend upon its amount, ranges from £13 to £16 per acre.

(To be continued).

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Fruit of the Parsley-leaved Bramble (Rubus laciniatus).—Just now, when hardy fruits are scarce, this merits attention. At Castle Ashby Mr. Beech has a remarkably fine example of it laden with clusters of ripe fruit, which is three times as large as that of the common Bramble. It is jet black in colour when fully ripe, and has an agreeable flavour. At Castle Ashby it is planted against a pillar, and the branches have been trained along stout wires right and left till it has reached a distance of 30 ft. It grows freely and fruits abundantly, and, apart from its fruit, it is a good ornamental plant. It is attractive in leaf, still more so when in flower, and additionally so when in fruit.—D.

Strawberries in Pots.—These should stand thinly in some open situation where they can receive as much sunshine as possible, removing all runners and weeds. If by any chance worms have found their way into the pots, a good watering with lime-water will dislodge them without injuring the plants; this is an evil which ought, however, to have been guarded against, by either setting the pots on beds of ashes, or on some other impervious substance. Two or three good waterings with liquid manure will, now that the pots are filling with roots, be beneficial at intervals of a week or so, but it must not be continued too late, especially if the plants be intended for early forcing, or it may excite their crowns too much, and so delay that maturation which is so essential to the production of a good crop of fruit.—E. H.

Gathering Pears.—Pears, as might have been expected, are later than usual this year, and being only a light crop the most will have to be made of them. The Bon Chrétiens and the Bergamots must not be allowed to hang on the trees too long, or they lose that juicy richness which a good Pear ought to possess. Gansel's Bergamot is a delicious autumn Pear if gathered in time, that is, as soon as the stalk can be got to part from the tree, whereas if allowed to hang a few days too long it would be no better than a Turnip. To make the most of these Pears this year they should be gone over several times so as to catch them the moment they are fit for gathering. That favourite autumn Pear, Marie Louise, may hang on the tree as long as it will without losing any of its richness of flavour, and in this way the season can be prolonged, but it should be netted up from birds and wasps.—E. H.

The Pomegranate in America.—General Stoneman is cultivating the Pomegranate to the extent of 5000 trees at San Gabriel, Los Angeles County, and thinks that he can make it succeed in the eastern markets by sending it there in large quantities in proper cars for the purpose. This may be classed among promising experiments.

Unfermented Wine.—At a late meeting of the Potomac Fruit Growers' Society, Dr. Goss, in a paper on the Preservation and Utilization of Fruit, gave his plan for making wine from Grapes and other fruits without fermentation as follows:—Press out the juice from the crushed fruit; then add one-fourth as much water to the pomace as there is juice, which is pressed also into the same vessel. This addition of the water causes the juice to settle or filter more readily. When settled, boil to one-third the quantity of the pure juice first pressed out, in a glass, stone, or porcelain-lined kettle set in another vessel containing water. To each quart of this syrup and a tablespoonful of salt. In this way wines may be successfully made from various fruits. All should be well corked and kept in a cool place, and they will keep for years.

THE FLOWER GARDEN.

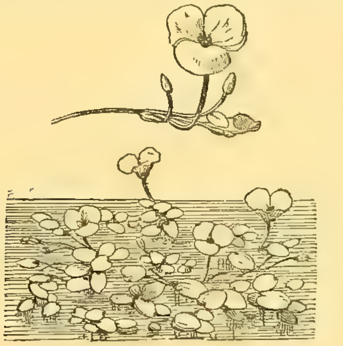
THE PARIS DAISY

(CHRYSANTHEMUM FRUTESCENS).

This is a vigorous half-hardy plant in one season forming, when planted out, bushes 3 ft. in height, and as much in diameter. It is much branched, and very symmetrical in habit; the foliage is pinnate and fleshy, of a glaucous blue colour; the flowers are large, pure white, with a yellow centre, and produced in the greatest profusion from June, until cut down by frost. This plant is extensively grown on the Continent for summer bedding as well as for pots. It is of far greater value for winter flowering than for any other purpose. Plants now in 4½-in. pots, if preserved from frost, will produce abundance of flowers until January. It is readily propagated from cuttings, grows in any ordinary loamy soil, and must be considered a desirable plant for all who appreciate white flowers during the winter months. P.

LIMNOCHARIS HUMBOLDTI.

This interesting aquatic plant covers the surface of the water in which it is planted with broad, heart-shaped leaves of a beautiful glistening green, and soft yellow flowers, which last in beauty for several months. It commences, as a rule, to flower in August, and continues in blossom till quite late in the season; it will thrive either in running or still water, planted from 6 in. to 9 in. below the surface, and I have even seen it successfully grown in tubs sunk in the ground. The tubs, which should be about 1½ ft. in depth, should be half-filled with loamy soil, and then filled up with water. The overflow from these tubs converts the ground in their neighbourhood into a kind of artificial bog, in which may be grown Sarracenia purpurea, Pinguiculas, Primulas, Ranunculuses, Grass of Parnassus, and many other interesting plants of kindred character. A. P.



SPRING BULBS.

Crocuses.—Now and onwards to the end of November is a good time to make plantations of Crocuses. They should be obtained not later than the end of September, and when got they should be spread out in a dry, cool place till wanted for planting. Bulbs obtained at the end of November or beginning of December frequently fail—they are kept in a heated place, and consequently dry up—they have to be kept turned over for the purpose of picking out any that may have decayed, when the shoots and skins are frequently rubbed off, and there is this positive advantage about early planting that, the sooner the bulbs are in the ground the sooner will they begin to make root and establish themselves. In planting dig out a trench 9 in. in depth and 4 in. in width at least; break up the soil at the bottom, and then put in 3 in. in depth of a mixture of decayed cow manure, leaf-mould, loam, and some finely sifted mortar rubbish; on this put a single line of bulbs, with a little rough white sand about them, and then cover it with some good loam. Deep planting is absolutely necessary, as the young bulbs are formed above the old one, which decays, and thus the roots are brought nearer the surface every year. Another advantage in planting deeply is that the bulbs are safe from harm when the surface soil is gently forked over in autumn. When the shoots are coming through the soil, if it be stirred and some good manure added as a top-dressing, the plants will derive much benefit from the application.

Hyacinths, Narcissi, and Tulips.—The forcing season, as regards these bulbs, has commenced in nurseries around London where plants are grown for market. Certain varieties of Hyacinths, a few of the early single and double Tulips, and the double Roman and Paper-white Narcissi are used for the purpose. They are grown both for their flowers in a cut state and for marketing in the shape of plants, and they are planted in large or small pots accordingly. The bulbs reach the growers by the middle of August; they are then potted, and placed on an ash bottom in the open air, and then they are covered with 6 in. of manure and spent Hops. Watering is left to what rain may happen to fall. The bulbs soon make growth, and as soon as they get near the time for throwing up their trusses and spikes of bloom, they are taken indoors. The early Roman Hyacinth and the double Roman Narcissus reach England in August, and they are prepared for forcing at once. This explains how blooms of the Roman Hyacinths can be seen in Covent Garden market in October.—D.

Clematises at Kew.—Like the Tricolor Pelargoniums and many other popular flowers, there is rather too much sameness amongst Clematises, especially the hybrids from Jackmanni. The subjoined half-dozen I selected the other day at Kew are good and distinct. They are planted round the edge of one of the large beds of shrubs, and trained to stakes. Except for purposes of comparison this is not the best way of training them, but no matter in what manner they are treated, when in flower they are very effective, especially when looked at from a distance. The following are the kinds just alluded to, viz., Otto Frœbel, white very large; Sensation, greyish mauve; Madame Van Houtte, white shaded with blue; Lady Bovill, very distinct shade of mauve; Thomas Moore, pucy-violet; Flammula maritima, white, sweet-scented. The last is a very desirable acquisition, evidently a free vigorous grower, with larger flowers than Primulas.—E. H.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Christmas Roses.—These have grown well this season, and whether in single clumps in borders or in beds, a surface-dressing of some good rotten manure and leaves will be found to be of great benefit, as it will induce the production of blossoms. If in beds, they should be cleaned before adding the dressing, and it may also be desirable to previously break up the surface-soil.—D.

Climbing Rose, Reve D'Or.—As a climbing Rose, Rêve d'Or has been strongly recommended (for the south of England) for covering the walls of houses. Planted seven years ago at Westwell Vicarage, it now covers a space of 24 ft. high by 12 ft. broad on the east aspect, and has gone round to the north side, covering a space there nearly as large; the stem is 12 in. round, and from within 1 ft. of the ground to its very outmost branches it is covered with bunches of blooms, thousands upon thousands, in all stages of development. It is in colour very like Madame Falcot; the description of Madame Falcot would also apply to this. There has been no peculiarity of treatment, it has been allowed to run away as it liked, but its most vigorous habit has led every year to the thinning out of an immense quantity of shoots.—"Florist."

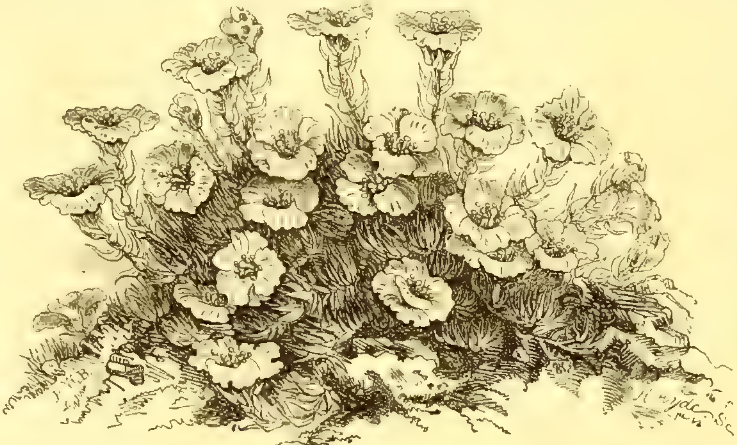
PLATE XCI.

BURSER'S SAXIFRAGE.

(SAXIFRAGA BURSERIANA).

Drawn by H. HYDE.

All Saxifrages are beautiful, either as regards leafage or bloom, but none even of the conspicuous flowering kinds surpass this in vernal beauty. The plant is of dwarf, indeed, almost Moss-like habit, forming broad patches and spreading rapidly over the earthy interstices of warm, moist sandstone rockwork, if planted where it does not suffer from stagnant moisture. The blossoms are borne singly on slender red stalks, which rise 2 in. or 3 in. above the general surface of the plant, and are, as will be seen, pure white, the margins of the overlapping petals being elegantly frilled or crisped. Interspersed among the fully-expanded flowers the unopened buds (which are of a dullish crimson-brown colour) show themselves to excellent advantage, and enhance the pearly whiteness of the petals. Of all Alpine Saxifrages this merits the most attention. It belongs to a group which is the most interesting of the genus, comprising, as it does, such kinds as S. Vandelli, squarrosa, Tombeana, calyciflora, cæsia, diapensioides, and a few others. S. Burseriana flowers in January and February before the Snowdrops, and even before the flowers are expanded, the brownish-scarlet buds, just emerging from compact silvery tufts of foliage, have a cheerful effect. It flowers very freely and soon forms good-sized tufts in the open border or on rockwork, preferring a dry sunny situation and calcareous soil. The annexed figure was prepared from a plant lifted from an open border in the Hale Farm Nurseries, Tottenham, where it had been growing for several years. It is a native of the Austrian Alps, and a plant that all lovers of hardy spring flowers should possess.

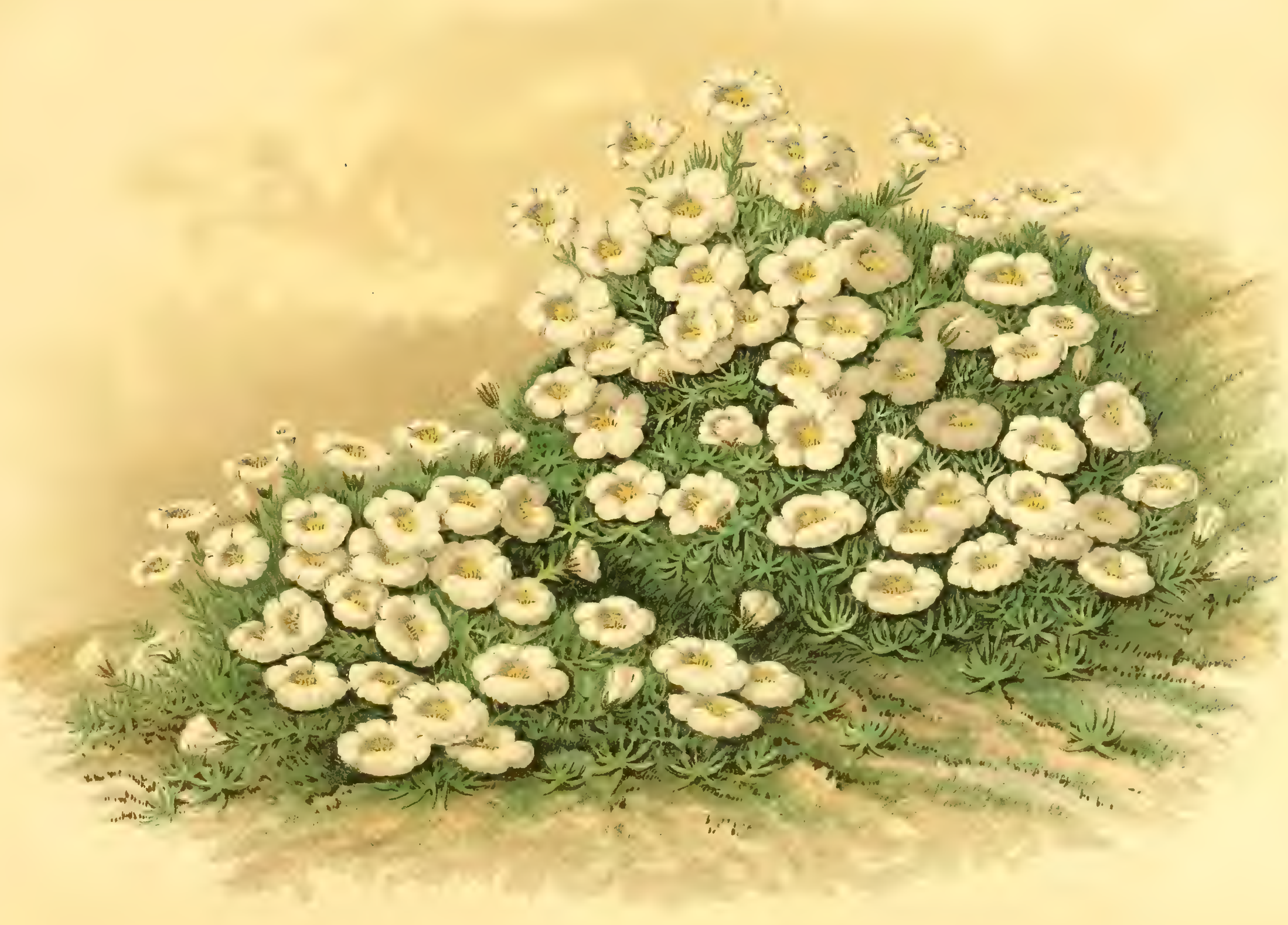


Burser's Saxifrage (Saxifraga Burseriana).

Double Rockets.—Now is the time to obtain cuttings of these and also to plant out the side shoots in some fine soil, into which they soon root. There are two distinct forms of the Double White as well as of the Double Purple Rocket in cultivation. The former is a tall-growing white, which turns to a pale flesh-colour with age; the other is the old white variety, of dwarfer growth, and with smaller and more compact flowers. The latter is very scarce indeed. It can be met with in the neighbourhood of Manchester and elsewhere in the north, but it is little known in the south, where it does not flourish so well as the common variety. There is the old Purple Double Rocket and a free-growing dwarf form known as Compactness, which has also larger and darker flowers. This can be easily propagated. During the autumn and winter months snails are very fond of the plants. They attack the white much more than they do the purple forms.—D.

A Wistaria-covered Cottage.—The Wistaria may often be seen on the walls of cottages, but seldom covering the whole roof. I noticed, however, the other day a cottage near Gravesend entirely covered with it. It was planted on the south side near the doorway, and numbers of large spreading limbs stretched themselves all round the sides and over the roof; indeed, the house was almost hidden amongst green leafage and a second crop of flowers. By training this plant on all sides of the house a great advantage is gained, inasmuch as the flowers are produced on the different aspects in succession, and by the time the latest blooms are over on the worst exposure a second crop is produced on the sunny side. —S.

Art Studies.—I would advise all the *chefs* and *cordons bleus* of the great clubs to take a walk down the line of ornamental flower beds skirting Park Lane. They will there see specimens of chromatic floriculture that would be invaluable patterns for *mayonnaise* and other salads.—"The World."



THE GARDEN IN THE HOUSE.

ASPIDISTRAS.

These were formerly placed in the Arum family; they are, however, undoubtedly Liliaceous plants. From thee lasticity of their constitution, they have long been favourites, especially in France, for the decoration of apartments. Keep them fairly watered, sponge the leaves now and then, and there is scarcely a limit to their endurance, even under such conditions as would totally fail to keep life in very many of our common hardy flowers. The two plants mentioned in these notes furnish excellent examples of species that will thrive well in drawing-room, stove, greenhouse, and in warm spots in the open border. As at present restricted by Mr. Baker, the genus Aspidistra contains but one species, A. lurida, a native of China, the Eastern Himalayas, and Khasia. A. punctata of Lindley is synonymous with this. The plant known so long under the name of Aspidistra elatior is now removed into the genus Plectogyne, and bears the specific name "variegata." It is indigenous to Japan. Not to mention its intrinsic merits, very much interest attaches to it in consequence of the extreme peculiarity in the structure of the flower. The beautiful, smooth, glossy, striated, stalked leaves spring from thick, creeping rhizomes, and the flowers are borne singly on very short peduncles. So short are the flower-stalks that the flowers are often more than half buried in the soil. The bell-shaped perianth is of a dull purple colour, eight-cleft. The style is thick, and expands into a large discoid eight-rayed stigma that closes up the top of the tube as completely as the lid of a box. How fertilization is effected, many observers have been much puzzled to know. The eight stamens are inside the box, whose walls are dusted all over with pollen: but how this pollen finds its way to the stigma is the question. If the stigmatic plate be held upside down, four little holes are visible, and according to Delpino's conjecture, minute insects crawl through these into the pollen-dusted box beneath, and emerge with pollen adhering to their bodies. They then fly to another flower, over and about the stigmatic rays of which they wander some time before finding another entrance. Be that as it may, fertilization very rarely takes place. Indeed, in Mr. Baker's revision of the genus in the "Journal of the Linnean Society" it is stated:—"Although the plant is not uncommon in our greenhouses, I am not aware that it ever produces fruit." Our figures represent two fruits from the respective establishments of M. Truffaut, of Versailles, and M. Touzet, of Paris. At first the fruit is deep green and extremely hard; when it arrives at full maturity it colours slightly and emits a Pine-apple odour. Figure 1 shows a plant with fruit *in situ;* fig. 2, an immature fruit; fig. 3, fruit natural size, and section of ditto; also seed natural size. G.

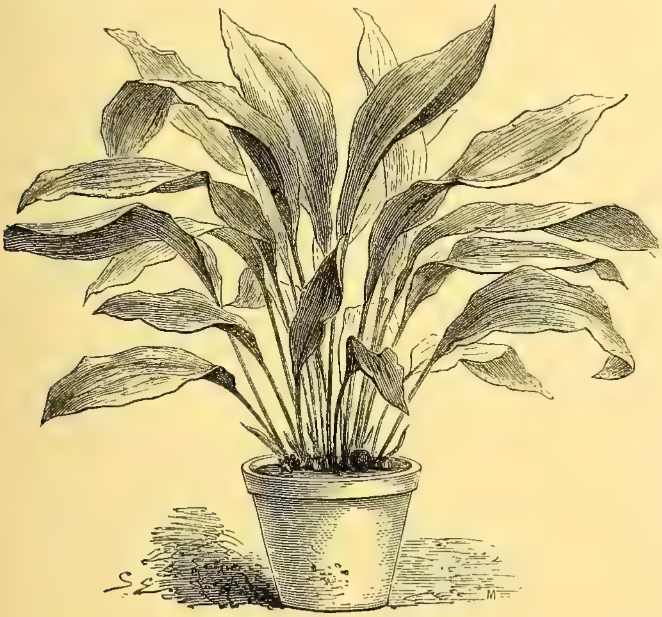


Fig. 1.—Aspidistra lurida variegata.

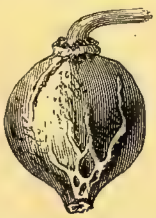


Fig. 2.—Immature fruit of Aspidistra.

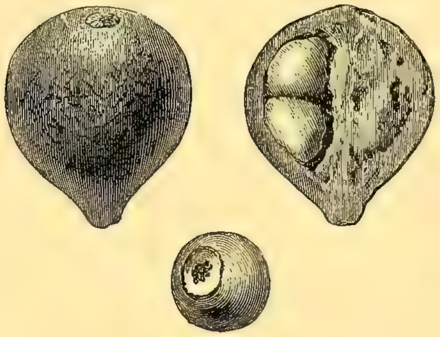


Fig. 3.—Fruit, section of fruit, and seed of Aspidistra (natural size).

NOTES ON MR. ELLACOMBE'S PLANT-LORE OF SHAKESPEARE.

Shakespearian readers are much indebted to any one, who, like Mr. Ellacombe, brings his special knowledge of a particular department of science to bear on the illustration of their author. I have not the presumption to question any of his botanical statements: but from the broader stand-point of Shakespearian criticism, there are some which seem to me open to exception; and in the expectation that the papers on "The Plant-lore of Shakespeare" will be reproduced in a more accessible form, I have thought it desirable to submit certain corrections for his consideration; at all events, the statements questioned are fair subjects for discussion in the pages of the journal in which the papers have appeared. I trust I shall be believed in saying that I offer my remarks in no carping spirit, and with unfeigned respect for the author of the papers criticised. The supplying of a few omissions will perhaps not be considered an impertinence.

Apple.

Mr. Ellacombe is entitled to his own opinion on the heretofore vexed question whether, in his quotation No. 12 "Caraways" is meant for a kind of Apple, or for Caraway seeds. He has, no doubt, duly considered all that has been written on the subject: but by the generality of readers the following quotation from Cogan's "Haven of Health," 4to, London, 1595, which, from consideration for your space, I select from a number of passages, cited from Shakespeare's contemporaries in the Variorum Shakespeare, will be deemed conclusive against him:—"Howbeit we are wont to eate Carawaies, or Biskets, or some other kind of comfits, or seedes, together with Apples . . . . ," adding medical reasons not necessary to be here reproduced. And as late as the middle of the seventeenth century Ralph Austen, in his "Treatise of Fruit Trees" (p. 79, 2nd ed., 4to, Oxford, 1657) says:—"If Apples offend any through winde, eat with them ginger or other hot spices, or Carroway seeds, Fennell seeds, or the like." The practice of eating ground ginger with Melon (no doubt for the same reason) is within the recollection of the present generation. Has the Caraway Apple any resemblance to the Kerry Pippin? If so, the one name may be a corruption of the other; if not, I should suppose the former to derive its name from being a sort suitable for eating with Caraway seeds, or, in other words, from its being specially regarded as table rather than culinary fruit.

Having deprived your correspondent of his Caraway Apple, I will make the best amends in my power, by supplying him with another, which is omitted from his list, viz.:—

> *Mercutio.* Thy wit is a very *bitter-sweeting*: it is a most sharp sauce.
> *Romeo.* And is it not well served in to a sweet goose?
> *Romeo and Juliet*, act ii., sc. 4.

Bachelor's Button.

This flower, though not exactly named by Shakespeare, is believed to be alluded to in the following passage:—

> *Hostess.* He will carry't, he will carry't; 'tis in his buttons; he will carry't.
> *Merry Wives of Windsor*, act iii., sc. 2.

The supposed allusion is to a rustic divination, by means of the flower, carried in the pocket by men and under the apron by women; as it was supposed to retain or lose its freshness according to the good or bad success of the bearer's amatory prospects. With the botany of this or any other plant I may have to mention, I do not meddle.

Balm.

In the statement that in Nos. 10 and 11 the reference is to the Melissa officinalis, there is no doubt a misprint or erroneous reference for Nos. 13 and 14. In Nos. 10 and 11, as in all the Nos. from 1 to 12, the allusion is to the medicinal confection.

Broom (see Furze).

Caraways.

If what is above written under Apple be the explanation of the passage from "2nd Henry IV.," Caraways, as a spice, will be as much entitled to a note of its own as Cloves or Mace, Nutmegs or Coloquintida.

Cowslip.

Has Mr. Ellacombe nothing to tell us about "the crimson drops i' the bottom of a Cowslip"? It is beyond my province to do more than point out that the commentators have taken exception to the phrase.

Cypress.

In the quotation No. 2, Cypress is not the name of a plant, but of the textile fabric now called Crape. It is a mere variation in the spelling of "Cypres," or "Cyprus."—the "sable stole of Cipres lawn," of Milton's "Penseroso." In the quotation I copy the spelling from the editio princeps of Milton's Poems (1645). We have the same word in the "Winter's Tale," act iv., sc. 3—"Cypresse blacke as ere was crow," as the first folio prints it: but Mr. Ellacombe rightly omits the passage, because modern editors (correctly enough if the spelling must be modernized) print it "Cyprus." In quotation No. 4 (in which there is a misprint of act ii., sc. 4 for act ii., sc. 1) it may admit of question whether we are to understand chests made of Cypress wood, or chests used for keeping Cyprus garments. I incline to the former, though there is perhaps a parallelism to justify the latter, in the mention of a "satin coffer" in "Pericles," act ii., sc. 1.

Fennel.

The virtues of Fennel, as enumerated in the quotations from Longfellow, do not comprise either of those attributes of the plant which illustrate the two passages from Shakespeare. The first alludes to it as an emblem of flattery, for which ample authority has been found by the commentators. Florio is quoted for the phrase "Dare finocchio," *to give Fennel*, as meaning *to flatter*. Why, I know not, as no explanation is given: but in attempting to ascertain, I observe, for what it may be worth, that in Spanish the same word "hinojo" means both *Fennel* and *the knee*. In the second quotation the allusion is to the reputation of Fennel as an inflammatory herb, with much the same virtues as are attributed to Eringoes.

Fig.

In some, if not all, of the quotations 5 to 11, the reference is not to the fruit so named, but to an insulting gesture, called "making the fig," the explanation of which is too unwholesome a subject to be here discussed: but see "Douce's Illustrations of Shakespeare and Ancient Manners," 1. 492. This is certainly the case whenever the word *fig*, *figo*, or *fico* is used as a term of contempt; but in a few cases it is questionable whether it be not an allusion to the practice of murdering by means of a poisoned Fig.

Furze.

In the second quotation, "long Heath, brown Furze," s certainly the usual reading; but the passage has been the subject of an emendation by Sir Thomas Hanmer, which seems to me to be entitled to more general acceptance than it has met with, and at least deserves notice in a paper with the objects of that under discussion. Gonzalo, in imminent danger of shipwreck, says—"Now would I give a thousand furlongs of sea for an acre of barren ground—Ling—Heath—Broom—Furze—anything"—anything that is land, however worthless for purposes of cultivation. Gonzalo, in his extremity, did not apply a distinctive epithet to Furze, to enable future botanists to discriminate between Ulex europæus and any other plant. Mr. Ellacombe seems to have been aware of the emendation, from his allusion to the first half of it under Heath and Ling. In his paper "furlongs" is misprinted "acres." See my note on Shakespeare's use of "furlong" as a measure of space, in "Notes and Queries" of the 23rd June last, and subsequent correspondence on the subject.

Gilliflower.

Mr. Ellacombe is no doubt right in connecting the Gilliflower with the Carnation; but the question is, what Shakespeare meant by it; and in the passage cited under the latter heading, from the "Winter's Tale," he shows, by naming both, that he was speaking of different flowers. At all events, under one or other heading should have been quoted:—

> *Polixenes.* Then make your garden rich in Gillyvors,
> And do not call them Bastards.
> *Winter's Tale*, act iv., sc. 3.*

In both the passages the word is printed "Gilly-vors," or "Gilly'vors," in all the folios; and the most recent editions, Cambridge, Globe, &c., recur to the old spelling, for which the commentators give an additional reason, not perhaps necessary to be here discussed.

Holy Thistle.

For "those," line 11 from bottom of page, read "thou."

Hyssop.

The passage from "Othello" wants elucidation; for the aptness of the selection of the plants named in it is by no means evident, and the commentators, so far as I am aware, have not discussed it. The following passage from Lilie's "Euphues, the Anatomy of Wit," sign. A, 7, ed. 1617, may help to throw light upon it, or at least be suggestive to others:—"They might also have taken example of the wise husbandman, who, in the fattest and most fertile ground, soweth Hempe before Wheat, and graine that drieth up the superfluous moysture, and maketh the soyle more apt for corne; or of good gardeners, who, in their curious knots, mixe Isope with Time, as aiders the one with the others; the one being drye, the other moist." Mr. Ellacombe's remarks, s. v. Strawberry, on the antipathies, &c., of plants have a bearing on this subject.

Ivy.

Having no objection to make, or correction to offer, I am perhaps going beyond my declared object in suggesting a botanical point. In quotation No. 4 it will be observed that it is by the seaside where the shepherd expects to find his sheep browsing on Ivy. In this passage Shakespeare has closely followed the prose novel, on which, as is well known, the "Winter's Tale" is founded, namely, Robert Greene's "Pandosto; or, the History of Dorastus and Fawnia." In the novel the shepherd "wandered down toward the sea cliffs, to see if perchance the sheep was browzing on the "Sea Ivy," whereon they do greatly feed." Would it not be worth while to inform us whether this is or is not any other plant than the Hedera Helix, or whether it is only to be found on the seacoast of Bohemia, or elsewhere in the land of Faerie?

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* I adopt Mr. Ellacombe's numbering of the scenes, but in the Globe Edition, which follows the authority of all the folios, the scene is numbered 4, the chorus forming the first scene.

Mustard.

Comparing this with other headings, I fail to discover where the line is drawn between Shakespeare's mention of the growing plant and that of its produce, or for what other reason the subject is dismissed without even the quotation of the Shakespearian passages in which the word occurs, which are six in number, besides three in which Mustard-seed occurs as the name of a fairy in the "Midsummer Night's Dream." The condiment, in the form in which we now expect the grocer to provide it, does not date from an earlier period than 1720, when Mrs. Clements, of Durham, having conceived and put in practice the happy thought of grinding the Mustard seed fine in a mill, and bolting and dressing it in the same manner as wheat flour, obtained the patronage of George I., and made her fortune by vending her celebrated Durham Mustard. But even in Shakespeare's time there was probably some mode in which it was prepared for sale, as appears from "2nd Henry IV.," act ii., sc. 4:—

> His wit is as thick as Tewkesbury Mustard.

Ray, in relation to a Gloucestershire proverb in which Tewkesbury Mustard is mentioned, says it refers to the "*Mustard balls* made there and sent into other parts;" but the earliest edition of Ray's "Proverbs" I have at hand to refer to was published long after the date of Mrs. Clements' preparation. Usually the seed was roughly ground in the quern, or hand mill, in which condition it may have been used dry, as we now use pepper. That the grinding of it was part of the ordinary domestic economy is shown by a passage in Scot's "Discovery of Witchcraft," 4to, London, 1584, in which he mentions that the maids were wont to set a bowl of milk for Robin Goodfellow 'for his pains in grinding malt *and mustard* and sweeping the house at midnight." In the Christmas Husbandry fare described in chapter xxix. of Tusser's "Five Hundred Points of Good Husbandry," 4to, London, 1610, "good Mustard" is one of the articles enumerated, in precedence even of more substantial viands:—

> "Good bread and good drinke, a good fire in the hall,
> Brawne, pudding and souse, and good mustard withall;
> Beefe, mutton, and porke."

And in the "Taming of the Shrew," act iv., sc. 3, it is spoken of rather as a special relish than an ordinary seasoning like salt or pepper.

Palm Tree.

In the passage No. 5, the propriety of the comparison of Timon in his adversity with the Palm arises from the belief in its power, not only to bear up against, but even to benefit by, repression. Lilie's "Euphues, the Anatomy of Wit," sign. A. 8. v., ed. 1617, has:—"It is proper for the Palme tree to mount: the heavier you load it the higher it sprouteth." And Buttes, in his "Dyet's Dry Dinner," 1599, quoted by Malone in relation to another passage, says:—"This tree is of a most aspiring nature: it will bear no coals [not submit to injuries]: it resisteth all burden, bearing it upward with his armes and boughes." Bartholomew Glanville, "De Proprietatibus Rerum," fo., London, 1535, B. xvii., ch. 116, speaking of the Phœnix dactylifera, says:—"In the south countrey is a maner Palme, that is alone in that kynde, and none other springeth ne commeth thereof. But whan this Palme is so olde that hit faylethe all for aege, then ofte it quyknith and springeth ayen of it selfe. Therefore men trowe that Fenix, that is a byrde of Arabia, hath the name of this Palme in Arabia. For he dyeth and quicneth and liveth ofte, as the forsayde Palme doothe, as Plinius saith there."

There is another passage in Shakespeare which, as the above quotation from Bartholomew Glanville in "De Proprietatibus Rerum" shows, ought to have been inserted either under this heading or that of "Date," namely—

> *Sebastian.* That in Arabia
> There is one tree, the Phœnix' Throne; one Phœnix
> At this hour reigning there.
> *Tempest*, act iii., sc. 3.

Mr. Ellacombe is perhaps right in omitting another passage:—

> *Horatio.* In the most high and *palmy* state of Rome.
> *Hamlet*, act i., sc. 1.

It is doubtful whether in this word, which Shakespeare has made familiar to modern ears, the allusion is to the Palm as an emblem of victory and the scriptural type of vigorous growth, or as the hunting term for the flat part of a stag's horn when at its full maturity (see Nares' "Glossary," s.vv. "Palm," "Palmy," and "Palmed Deer."). Of course, the word Palm in this sense is derived from the spreading frond of the Palm tree, or from their common original, the Greek παλαμη and Latin *palma*, the primary meaning of which is the palm of the hand.

Pear.

In an interesting paper by Mr. Hudson Turner "On the State of Horticulture in England in Early Times, chiefly previous to the Fifteenth Century," printed in the "Archæological Journal," vol. v., p. 301, it is stated that the Warden Pear had its origin and its name from the horticultural skill of the Cistercian monks of Wardon Abbey, in Bedfordshire, founded in the twelfth century. Three Wardon Pears appeared in the armorial bearings of the Abbey. The Warden pie retained its name long after it ceased to be served up in pastry, and became what we should now call a dish of stewed Pears, the only difference being that instead of Saffron we use a pink colouring matter, if any.

Pomegranate.

It would be ungracious to supplement Mr. Ellacombe's papers with remarks, however appropriate, not necessary either to illustrate the subject or to correct errors; but, as in the case of the Palm quotation from "Timon of Athens," so in No. 2 from "Romeo and Juliet," it is due to Shakespeare to notice a peculiarity in the plant which makes his mention of it specially appropriate. Mr. Knight, in a note which I cite secondhand from the New Variorum Shakespeare, has pointed out the attachment of the nightingale to the Pomegranate tree, no doubt noted by Shakespeare from some of the old books of travel; and quotes a similar remark from Russell's "History of Aleppo," adding that "a friend, whose observations as a traveller are as acute as his descriptions are graphic and forcible, informs us that throughout his journeys in the East he never heard such a choir of Nightingales as in a row of Pomegranate trees that skirt the road from Smyrna to Boudjia."

For "Batte's 'Dry Dinner,'" tenth line from the bottom of column, read "Buttes' 'Dyet's Dry Dinner.'" The work is quoted above under Palm tree.

Primrose.

In first quotation for act v., sc. 2, read act i., sc. 6.

Quince.

The connection of the Quince with the preparations for Juliet's wedding deserves a little further illustration, as it seems to have had a symbolism connected rather with conjugal happiness than with its dedication to Venus, even assuming, on Mr. Ellacombe's authority, that the fruit sacred to her was the Quince. In Lilie's "Euphues and his England," sign. A. 6, ed. 1617, Euphues writes:—"I will be bold to counsell thee, knowing it never to be more necessary to use advice then in marriage. Solon gave counsell, that before one assured himselfe, he should be so wary that, in tying himselfe fast, he did not undone himselfe, wishing them first to eate a Quince Peare, that is, to have a sweet conference without brawles; then salt, to be wise without boasting." I have not succeeded in tracing the reference to Solon, unless it be found in a passage in Plutarch, giving an account of a law of Solon in relation to unfruitful marriage with an heiress, in which case he sanctioned a connection between the wife and one of the husband's nearest kinsmen of her own selection; and it was enacted that "such a new married wife should be shut up with her husband and eat a Quince with him." M. Dacier, or his English translator, has a note on this passage, that "the same ordonnance was observed in *all* marriages, the legislator thereby giving to understand not only that the married couple were to abstain from giving each other hard words (for it is the quality of the Quince to sweeten the breath), but also that they should be watchful and intent upon their mutual safety and preservation, it being likewise the property of the Quince to deaden the malignity of poison and render it ineffectual." There is nothing in all this to connect the Quince with the Golden Apple of Venus, which she acquired by competitive examination for the inauspicious prize of the Goddess of Discord. Perhaps the tree she planted in Cyprus was a seedling from it; but writers on the subject, and more especially Prof. Martyn, in his edition of Virgil's "Eclogues," maintain that it was a Pomegranate.

Rue.

There is another Shakespearian passage which should have been quoted, viz.:—

Antony. Grace grow where these drops fall.
Antony and Cleopatra, act iv., sc. 2.

A comparison with quotation No. 2 shows clearly that Grace here means Herb of Grace, or Rue.

I do not understand Mr. Ellacombe to allege an etymological connection between Rue and Ruth, but only to trace a popular name from the original suggestion, prompted by similarity of sound, through the stages of Herb of Ruth, Herb of Repentance, Herb of Grace. In Shakespeare's hands the connection between Rue and Ruth is one of those verbal quibbles, the excessive use of which is, at least to modern taste, a blemish to his works. Another instance, applicable to the present subject, of this play upon words is perhaps contained in the following passage:—

Friar Laurence. In man, as well as herbs, grace and rude will.
Romeo and Juliet, act ii., sc. 3.

The passage from "Hamlet" is one which yet awaits explanation. Even in the utterances of insanity we expect a meaning, understood between the poet and his audience, though the language may be intentionally incoherent. Possibly the offer of Rue to the Queen contained a covert allusion to a supposed property of the plant, referred to in Barnabe Googe's "Foure Bookes of Husbandrie." He says (p. 55 a., ed. 1586) that this herb "can not abide the presence of an uncleane woman." With this clue I think I see a glimmer of meaning in the language and acts of Ophelia. "For me," she says in effect, "it is, as its popular name implies, the symbol of that grace which forms the topic of Sunday discourses; for you, it is a reproach to an incestuous life." The distinction, by a not very correct application of heraldic language, according to a favourite practice of the poet, is called wearing the Rue with a difference.

The respectable authority last quoted repeats the belief as to the prosperity, in this instance, of stolen goods. He says, "it delighteth in the shadowe of the Figge tree, and being stolne, as they say, it prospereth the better: it is sowed with cursing, as Cummin and divers others;" of which, he says, at p. 57 a., "it is sowed best, as they thinke, with cursing and execration, that it may prosper the better." I presume Mr. Ellacombe will disapprove of these cultural directions, but as they are of a peculiarly practical character, the readers of The Garden may like to be acquainted with them.

Speargrass.

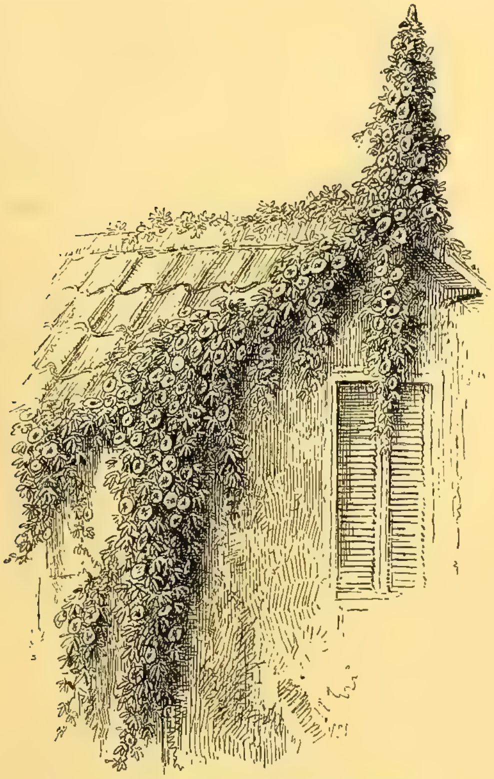
The reference to authorities in favour of the suggestion that Yarrow or Milfoil is meant is in such general terms that I know not whether this note will add anything to the materials for a decision on what is confessedly a doubtful question. Professor Lindley, in an article on Achillea millefolium, in Morton's "Cyclopædia of Agriculture," says "it is sometimes called Nose-bleed, because the leaf, loosely rolled together and put into the nostrils, causes, by an external blow of the finger, a bleeding of the nose, which proves more or less copious according to the state of the vessels within." Something of the same sort, but less to the purpose, is mentioned in the Appendix to Forby's "Vocabulary of East Anglia" (ii. 425), describing the use of it by way of amatory divination. Nose-bleed is found in the Botanical Glossary in Skinner's "Etymologicon Linguæ Anglicanæ," with the synonym of Millefolium, and a similar notice of the property from which it derives its popular name. We have then distinct evidence of this plant being notoriously used for the purpose described by Bardolph: but whether it is what Shakespeare calls Speargrass is a question on which I do not venture an opinion. The objection that it is not in fact a Grass is, I suppose, equally applicable to the Equisetum, while in the one case its use for the purpose in question is a fact, and in the other it is, at best, an inference. As to a soldier pricking his nostril with a Reed, he might just as well have pricked it with his dagger. Similarity of sound, that *ignus fatuus* which has led so many critics into a bog, would point to Asparagus: for a compromise between the two corrupted forms "Sperage" and "Sparrowgrass" would bring us exactly to Shakespeare's word; but the plant does not seem applicable to the purpose alluded to.

John Fitchett Marsh.

Hardwick House, Chepstow.

GARDENING IN EGYPTIAN DESERTS.

Of all lands which gardening might render beautiful none is so destitute of natural attractions or variety of surface as the great expanse of sandy desert (alternating, as it does, here and there with low mud flats or glaring snow-like deposits of salt), which extends right across Egypt, from the Mediterranean on one side to the Gulf of Suez on the other—a region in which salt sands and arid winds seem to have excluded even the most remote prospect of spontaneous vegetation, and where all the charm of plant life (doubly, nay immeasurably, more interesting amid such ultra-desolate surroundings) is, and must ever be, dependent on gardening art and industry. The completion of the Suez Canal, apart from facilitating European and Eastern commerce, has also been the means of introducing vegetation, more or less beautiful, into a locality where it was previously unknown; also, if report speak truly, of having rendered the climate, bad as it now is, more favourable for cultural purposes, since a current of cool air now flows along the Canal, and attracts the precious burden of the rain-clouds to a tract of hot sands previously destitute of showers. Of all Eastern nations the Arabs would appear to be the very worst cultivators of the soil, and wherever an artificial oasis is found one may generally trace its origin to an European owner. At Suez, for example, the houses of the French, English, and other European residents are draped with fresh green creepers, and the little gardens are gay with annuals and other flowers. Glancing down one of the little narrow streets leading to the shingly beach, I saw some picturesque old buildings, almost entirely covered with bright green leafage and large lilac-purple flowers, which at a distance of 100 yards or more I concluded to be a Clematis, although a little reflection told me that was impossible. A nearer view proved it to be Batatas paniculata, a most elegant-habited plant, having trailing stems 40 ft. to 50 ft. in length, clothed with digitate leaves like those of the blue Passion-flower, but of a brighter green tint; among the leafage is produced a succession of Ipomœa-like flowers, 2 in. or 3 in. in diameter. This plant is deservedly a favourite here, and is popularly known as the "Fochow Creeper," being as highly valued in China as it is here; further inland it is used to cover the light fences of yellow Reeds, around which it twines in a graceful way, reminding one of the pretty pink-flowered Convolvulus of our own cornfields and hedges. Happening quite by accident to meet with the hospital physician, Dr. Flood, a Norwegian, I had a good opportunity afforded me of seeing his garden, which is one of the most interesting in the whole place, and like most others here is protected from dust and winds by a close fence of Arundo. In the centre of one division is a specimen of Pandanus utilis, 20 ft. to 30 ft. in height, and much branched above; the common Bamboo reaches a height of 50 ft., forming large, feathery tufts, and the Date Palm (Phœnix dactylifera) grows fairly well. Hibiscus Rosa-sinensis was in great beauty, bushes 12 ft. high and with heads 12 ft. in diameter, covered with great crimson blossoms, each nearly 6 in. across; a tall growing Erythrina, which had been cut back a month or two ago, was sending up a great sheaf-like mass of wand-like, leafy shoots from the old trunk, each terminated by a spike of bright coral-tinted flowers. Passion-flowers luxuriate and clamber from tree to tree at their own sweet will, with Aristolochia ornithocephala and the glossy-leaved Tecoma jasminoides for associates. I was agreeably surprised to find the Virginian Creeper growing moderately well in moist, shady positions, but with none of that wild luxuriance seen in the back gardens of London. That it is not a success here is not so much to be regretted, seeing that the "Fochow Creeper" is quite as beautiful in leafage, equally graceful in habit, far more luxuriant under a hot sun, and having moreover a floral beauty peculiarly its own. Vinca rosea and its white variety are perfectly at home here, forming compact bushes 2 ft. to 3 ft. high, and the same in diameter, and bearing flowers in abundance. Castor-oil plants attain a height of 12 ft. to 14 ft., becoming much branched, and they fruit much more freely than in the London parks. Some of the specimens I saw here are old and have thick, woody stems, but they possess none of that luxuriant leafage and freshness so commonly obtainable in English gardens during the summer months. Shade being so essential to comfort in a hot climate like that of Egypt, most of the walks which are not overshadowed by Acacias, Mastic, Tamarisk, or Bamboo, are trellised over and covered by creepers. Lantanas of various kinds submit to this kind of culture, and with excellent results; indeed, I saw nothing whatever finer in its way than a covered or trellised path over which these plants had been trained. The hot, dry air and sun seem to suit their growth admirably, for here they covered the trellises with great fleecy masses of dark green foliage; this last, however, could scarcely be seen from above on account of the innumerable heads of flowers with which every bit of growth is studded. Succulent plants, such as green and variegated American Agaves, Yuccas, columnar species of Cereus and Euphorbias, grow luxuriantly, and one little summer-house was entirely covered, and that by no means sparsely, with an enormous specimen of Cereus Macdonaldiæ, a scandent species, having jointed, triangular phyllodia, and large, white flowers, similar to those of the night-flowering C. grandiflorus, and equally fragrant. Mesembryanthemums are used here and there as edgings to the flower beds, and of course are perfectly at home, growing and flowering freely, and, being mixed, their crimson, pink, buff, yellow, and white star-like flowers have a pretty effect. Daturas or Brugmansias form compact bushes, and flower freely, and the Marvel of Peru, which is, as a rule, so unsatisfactory in English gardens, is here a marvel of floriferous vigour and variety in the way of colour. Scarlet Pelargoniums, both single and double varieties, are evidently much admired, being found in conspicuous positions in nearly every garden, forming old bushes 2 ft. to 3 ft. in height notwithstanding the hot sun, however, they do not flower nearly so freely as younger specimens do in many Continental and English gardens. Large clumps of Crinums, Malvas, and single-flowered Hollyhocks, Zinnias, Sunflowers, Larkspurs, and other common annuals are interspersed among the shrubs and trees; indeed, there is in the gardens here a total want of the meaningless formality so prevalent in the gardens of Europe; the first essentials here are shade and fresh greenery, with the addition of flowers sufficient for variety and contrast, and the good results of such a mode of arrangement is variety of the most satisfying description, the visitor being irresistibly attracted from one point to another by some plant or flower distinct from those previously seen; there is scarcely any portion of these gardens which does not contain ample materials for the most agreeable pictures of vegetation, and that this should be so is a matter of some surprise, seeing that both earth and water have to be brought from Ismailia, a distance of nearly fifty miles, and that nothing can be done in the way of culture except by careful irrigation. To favour this operation the flower beds and little plots where a few Radish, Lettuce, or other salad vegetables are cultivated, have to be constructed a few inches below the general level, so as to prevent any waste of water. Fruit trees are not much cultivated; Figs and Grapes are, however, found in most gardens, and the Prickly Pear (Opuntia vulgaris) also grows well and fruits abundantly. A pyramidal Apple tree in good health, bearing half-a-dozen fruit, was evidently considered a great curiosity by the old, white-turbaned Arab gardener in charge. I had nearly forgotten to mention that the Australian Blue Gum tree (Eucalyptus globulus) succeeds here fairly well, its leaves being used in the hospital as an antiseptic dressing for flesh wounds with good results, and infusions of the bark for dysentery were under trial. The fruit and vegetable market and shops of Port Said are fairly well supplied with produce, the islands of the Mediterranean, Malta and Sicily contributing most largely. Oranges and Lemons were obtainable, as were also small Apples and Plums in quantity, but of inferior quality, and only fitted for culinary uses. Melons were, together with Oranges, by far the best dessert fruits obtainable. Large Water Melons were abundant, at prices varying from 6d. to 1s. The true Water Melon is an immense green fruit 12 in. to 15 in. in diameter, and of an oblong shape, having a dark glossy-green skin; its crystalline flesh is firm, but deliciously cool and melting, and in hot weather a most welcome assuager of thirst. The numerous seeds are almost as large as those of the Vegetable Marrow, and of a black colour; these are imbedded in the rosy, salmon-coloured flesh, and not confined to the central cavity within the fruit, as is the case with the kinds grown in English gardens. Dried Dates, Figs, and Nuts were abundant, as a matter of course. Vegetables were represented by long French Turnips, Aubergines, Garlic of excellent quality, Onions, the large Red Soup Gourd of the Paris markets, Capsicums, French Beans, Peas, Cabbage, Maltese Potatoes, and large quantities of Okra, a vegetable but very seldom used in European cookery, although common throughout the East, and also in the warm American States. These impressions of Egyptian gardening are derived from observations made in a peculiarly dry, hot, and sandy district, in which, as previously mentioned, even the first two elements of gardening, namely, soil and water, are naturally absent. Perhaps the most fruitful and verdant part of Egypt is that watered by the overflow of the Nile, or by artificial irrigation on a large scale carried on in the vicinity of that river, and where the vegetation is both abundant and luxuriant, more so, in fact, than that of most other inter-tropical countries. The tract here described is naturally barren as a granite rock, and the difficulties to be overcome by the cultivator are so great that the results, comparatively speaking, are but little less successful than those obtained in many far more highly-favoured regions. F. W. B.

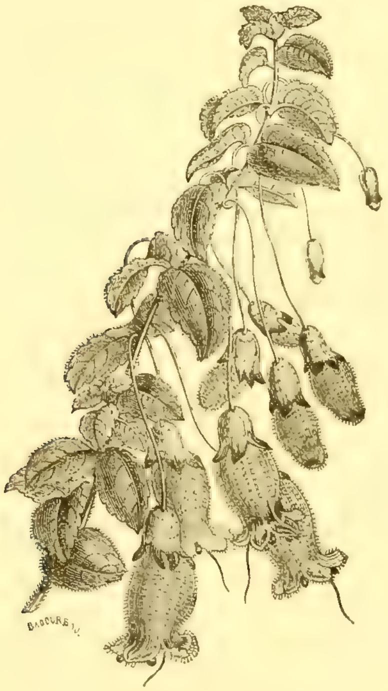

Batatas paniculata on a house at Port Said.

THE INDOOR GARDEN.

THE SCARLET MITRE-FLOWER.

(MITRARIA COCCINEA).

This is a free-growing, and equally free-flowering, dwarf Gesnerad from San Carl de Chiloe, that requires a cool greenhouse temperature. The time of blooming, as in the case of most other plants, is somewhat regulated by the temperature in which it is kept, but it will generally be from the beginning of July to the end of October. Its flowers, produced much in the manner of a Fuchsia in succession for a considerable length up the shoots, are of a bright scarlet colour; the bracts are mitre-shaped—hence the derivation of the name. It is easily grown, and strikes freely in sand covered with a propagating glass in a temperature similar to that required for propagating Fuchsias, and will thrive in peat with a moderate addition of sand. The shoots should be occasionally pinched, to induce a bushy habit of growth, and the plant requires a few sticks for support. It needs a fair amount of water during the growing season, but should be kept drier in the winter; the shoots ought to be cut back after flowering. It makes a welcome addition to the greenhouse during the early autumn months when flowers are scarce, and will be found very suitable for a small house. T. Baines.



Mitraria coccinea.

Potting Soil.—Within the next few weeks is the best time to get in loam and peat for potting purposes. Amateurs often labour under two impressions about potting soils that are quite opposite, and both are erroneous; one is to suppose that pot plants generally can be made to grow in any sort of material; the other is an idea that unless the best loam is available, it is useless attempting the cultivation of many subjects; and frequently expend considerable sums in getting it from long distances, when they have plenty near at hand that would answer all ordinary purposes. If the soil be free from mineral impregnations (iron in particular), wherever the turf is composed of close, moderately fine Grass that has lain for some years, it may be reasonably expected to answer; it should not be dug more than 3 in. in thickness, so that it may be thoroughly permeated by the roots of the Grass, as the mechanical influence of these root fibres, in keeping the soil in a porous open condition congenial to the plants which are to be grown in it, is of equal importance to the chemical elements contained in the soil. The reason why the present is the best time of the year for getting it is that the roots of the Grasses are at this season the most abundant, and have attained a tough, matured state which enables them to last, or in gardening parlance, to wear well. It should be stacked up in the open air in a heap ridge-fashion, so as to throw off the rains, laying the Grass side downwards. Where, as with most amateurs, it has to be used for many species of plants, some needing a little manure, others a good deal, it is better not to mix any with it at the time of stacking it, as when it is prepared for use, manure more or less, according to the requirements of the subjects to be grown, can be added. In respect to peat it is somewhat different; for plants that absolutely require soil of this nature it is necessary to procure it of a sufficiently open description, such as obtainable from high-lying ground where Grass and Ferns grow freely; and not either the soft boggy stuff with almost the consistency of putty, or that of a hard impervious nature generally met with where the strong varieties of British Heaths grow. Both of these latter are to be avoided; the former is totally unfit for anything but Rhododendrons, or other hardy shrubs, and the latter is usually poor, and even when well mixed with sand not well calculated for the roots of tender plants. Peat may generally be dug somewhat thicker than loam, but, like it, should be stacked up out-of-doors, where it is much better than under cover, except for so long as is requisite to dry it sufficiently for use. I should never recommend more soil, either peat or loam, being got in at once than is necessary to last for a year, as after that time deterioration takes place by the decomposition of the fibres. Leaf-mould should also be procured to mix with the loam for Primulas, Cinerarias, and similar subjects; with the above, some well-rotted manure, silver sand, and Sphagnum Moss, amateurs will find that they have got all that is needful in the way of soil for whatever plants they may choose to cultivate.—T. B.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

September 17.—Sowing Red and White Turnip Radishes in pits. Potting outdoor-struck Pelargoniums. Pricking out Cauliflowers and Red Cabbage plants. Clearing off a piece of Turnips, and heavily manuring and digging the ground for Coleworts. Clearing out Melon pit, adding a little more soil and manure, and planting it with dwarf Beans for winter bearing. Tying up Lettuce and covering up Endive to blanch. Cutting back all young growth on Tomatoes, and exposing the unripe fruit to the sun. Turning a large heap of manure, and adding a little salt and soot to it for general use. Clearing off the surface of early Vine border, and giving it a top-dressing of loam, horse-droppings, and coal ashes.

Sept. 18.—Potting Dutch bulbs in a mixture of loam, manure, charcoal, and sand. Filling up all spare frames with Lettuce and Endive. Dressing early Black Hamburgh Vines with composition to kill insects. Erecting a temporary frame over pot Strawberries on which to place spare lights to keep off heavy rains. Rolling newly made gravel walks. Looking over all young fruit trees, and applying new ties and stakes where necessary. Gathering Hawthornden, Cellini, and Golden Pippin Apples; also a few Golden Drop Plums.

Sept. 19.—Potting off variegated Pelargoniums. Putting in another batch of Osborn's forcing French Beans and Ashleaf Kidney Potatoes that have been previously started in pots for forcing. Roping Onions. Washing woodwork in houses, and, when wet, cutting shreds and making labels and flower-sticks.

Sept. 20.—Putting in cuttings of Cerastium under hand-lights Potting off Centaurea candidissima as soon as rooted; also putting a few Primulas and Cinerarias into their flowering pots for early blooming. Weeding and thinning out all overgrown Parsley. Hoeing amongst all late-planted Endive and Lettuce. Putting hay-bands round Cardoons and earthing them up.

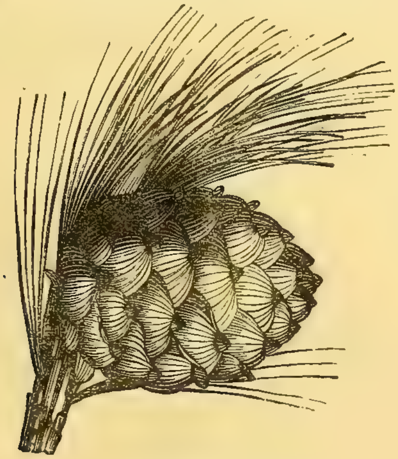
Sept. 21.—Putting in Tomato cuttings to furnish plants for early fruiting. Shaking out and re-potting old plants of Tricolor Pelargoniums. Thinning out Endive and Lettuce. Manuring and roughly digging the ground previously occupied by Cauliflowers. Weeding and cutting the runners off pot Strawberries. Preparing frames for Cauliflower plants by putting a thick layer of green turf Grass side downwards, then 1 in. of good mould in which to prick out the plants, which are placed 6 in. apart each way. Gathering Berberis, Reine Claude de Bavay, and Coe's Golden Drop Plums.

Sept. 22.—Putting in Tom Thumb and Indian-yellow Pelargoniums in large store boxes and pots. Earthing up Celery when the soil is dry. Thinning autumn-sown Carrots and Turnips. Weeding Box edgings, &c. Gathering Gansel's Bergamot, Citron de Carmes, and Dunmore Seedling Pears, and Ribston Pippin Apples. Fruit in use for dessert—Pines, Grapes, Melons, Peaches, Nectarines, Figs, Plums, Pears, and Apples.

TREES AND SHRUBS.

THE SWISS PINE (PINUS CEMBRA).

This Conifer was introduced into Britain in 1746 from the Alps of Switzerland, where it is abundant; it also grows naturally and forms large forests on other mountains of Europe and in northern Asia; it is generally found in the highest regions, close upon the verge of perpetual snow. It is of slow growth and does not attain large dimensions, averaging about 50 ft., and rarely exceeding 80 ft. high; its timber is said to be of good quality, and is much used by the Swiss peasants for making carved figures and fancy goods; it is also used for cheap turnery work, the wood being fine-grained, soft, and very durable when not exposed to alternate changes of wet and drought: being a very resinous wood, it emits an agreeable fragrance. The seeds, it is said, are eaten by the natives, and are much relished as an article of food, chiefly as dessert. Although this Pine has been grown for many years in this country, it has not been cultivated extensively; one reason for this is possibly because it has not been cheap enough to plant in large quantities with a view to a profitable return. Another reason probably is the slowness of its growth, for it rarely makes a greater progress than about 12 in. in a year when fairly established in permanent quarters, and even not so much as that in poor soils and on exposed sites; in the nursery, through being constantly shifted, it only grows on an average about 6 in. during a season. It has been mostly planted throughout the country in Pinetums, or as a specimen tree in ornamental grounds with full liberty to develop its lateral branches, and without the benefit of nurse trees and close shelter to help to draw it up to a clean stem. Probably, if it were tried in a plantation amongst other trees, and subjected to the same treatment, it is quite possible it would be found to grow more rapidly. Its habit, so far as we have been able to judge from specimens grown in open situations, is stiff and formal, of an elongated conical shape, and branched in regular whorls from the ground to its top—a form that can hardly be called beautiful or ornamental, but no doubt desirable by way of contrast amongst trees of more graceful habit of growth. I am told that the form of this tree, when growing naturally on the Alps, is very similar to that of the Stone Pine (Pinus Pinea). In that case its form would be just the reverse of what it is in this country, the Stone Pine having an irregular flat-headed habit and picturesque outline. The foliage of the Pinus Cembra is pretty, being of a pleasing light green on the upper side, while underneath it is partly silvery, thus adding a dash of glaucous colouring amongst the green. The leaves are in five, and from 2 in. to 3 in. long. The cones are erect, bluntly ovate, nearly as broad as long, and of a violet colour when young. There are specimens of it in England from 50 ft. to 80 ft. high—a proof that, notwithstanding its slow growth, it will in this country attain a height equal to that of its native habitat.


Cone of Pinus Cembra.

G. B.

Japan Judas Tree (Cercis japonica).—The Japan Judas is one of the most beautiful and attractive of the early flowering shrubs, and deserves a much more general appreciation and use than it has received. It is a bush of slow growth, attaining a height of from 8 ft. to 10 ft. in as many years, very symmetrical and compact in habit, which makes it valuable as a decorative plant for small gardens, and does not lessen its value as an ornament for large lawns or parks. It differs greatly from the old and well-known American Judas Tree, and is vastly superior to it in being dwarf and compact in habit of growth. The flowers are larger, more thickly set on the stem, and of a much brighter and prettier colour. The foliage is larger, darker green, and much more abundant. The flowers open about the 1st of May, and are in perfection before the 15th. They are small, with stems so short as to be scarcely visible, and borne in clusters or knots all along the branches, looking as though they had burst forth from the hard, apparently lifeless wood. Every limb and twig on the whole plant, from the ground to the top of the tallest branches, is then clothed with a dense mass of bloom of the brightest shade of rosy-pink, before the leaves appear. When planted amidst evergreens or early starting shrubbery to supply a green background, and in full bloom, it is certainly one of the most attractive and gorgeous sights to be found among flowering shrubs. The leaves, which appear soon after the flowers are faded, are particularly pretty, being nearly round in shape, 4 in. to 6 in. in diameter, thick and leathery, of a rich, dark green colour, and produced in such abundance that the bush appears to be a solid mass of verdure, making it an especially attractive shrub during the summer, when not in bloom. It appears to be generally hardy in the latitude of Philadelphia, though the flower-buds are occasionally injured by very severe winters. To guard against this, a situation protected from cutting winds, and where water will not lie around the tree, is desirable. It has been in this country at least twenty years, but the difficulty of propagating it is such that the market has never yet been supplied.—"Gardener's Monthly."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Finely-grown Catalpa.—Allow me to bring under your notice what seems to me to be a very fine Catalpa, which was beautifully in flower in the last week in August. The specimen in question is 30 ft. in height, and 45 ft. in spread of branches. It stands in the courtyard at Claydon, and is pretty well sheltered by means of surrounding buildings. Æsculus macrostachya was also in full flower at the same time. Ceanothus americanus, covered with pretty white blossoms, was likewise a striking object amongst shrubs; and there was another Ceanothus with pale blue flowers, with the name of which I am unacquainted. The old Rubus odoratus is another good shrub for autumn. All the above are well worth the attention of planters. —J. M.

Infant Hawthorns in Flower.—In The Garden (see p. 206) is a representation of a seedling Hawthorn in flower, furnished by Mr. William Stewart, Jun., of Dundee, who adds that he "had never seen anything of the sort before." Such an occurrence may not be common, but we may state that fully half-a-dozen plants flowered in our seedling beds this year.—R. & A. Morrison, *The Nurseries, Elgin.*

The Golden Catalpa.—This makes a good companion for the Silver Maple (Acer Negundo variegatum), either planted in groups in shrubberies, on the lawn, or as centres to flower-beds. The golden tints of its foliage are especially effective just now.—H.

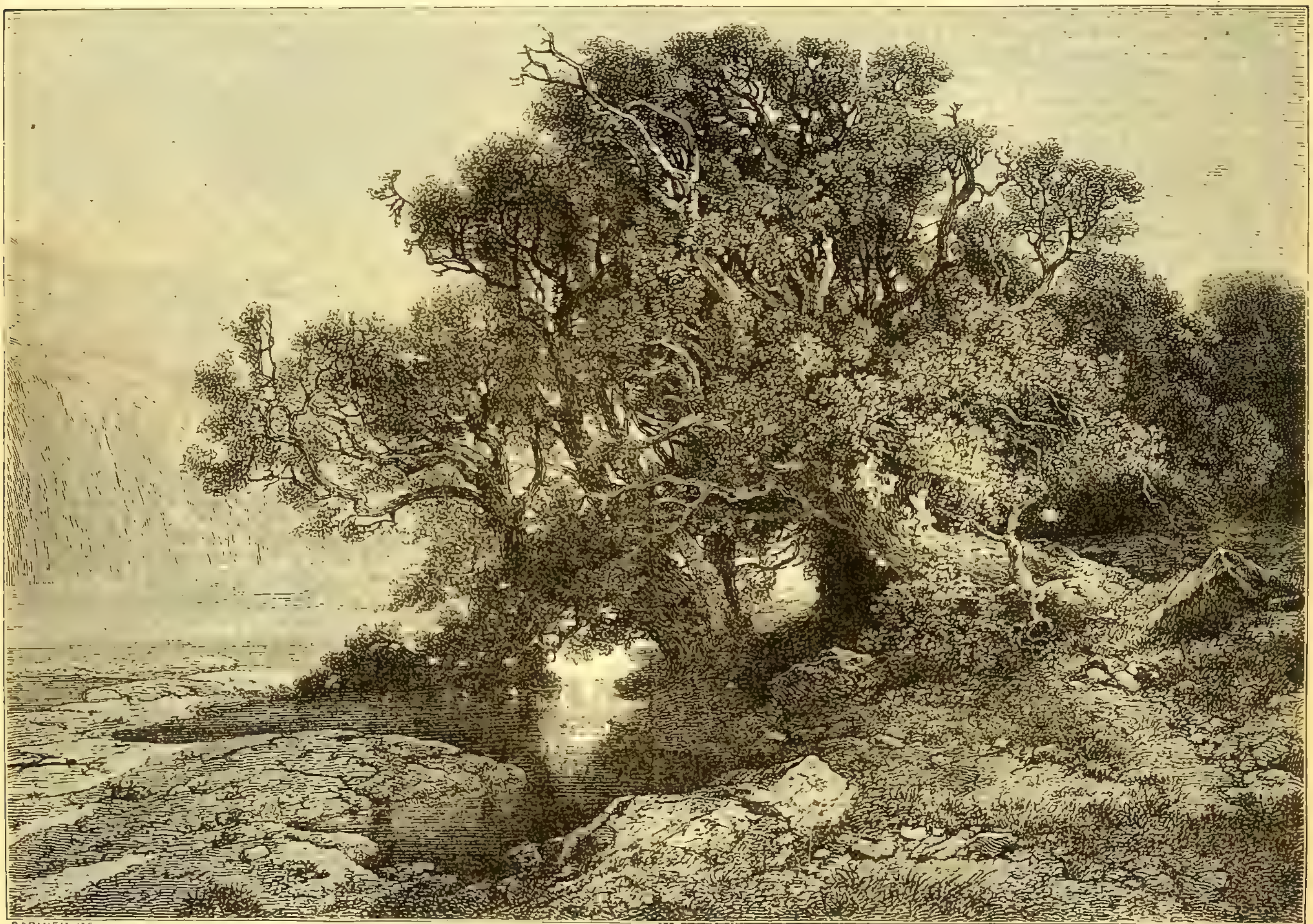
A Handsome Eucalyptus.—Some of the Eucalypti have beauty as well as fragrance. The annual report of the Director of the Melbourne Botanic Garden, in referring to improvements in portions of the grounds, says that several specimens of the gorgeous scarlet-flowering Eucalyptus filicifolia are planted there, and then adds:—"This magnificent plant, from Broken Inlet, Western Australia, produces its flowers at a much earlier stage of growth than any other species of the genus with which I am acquainted. Its bloom resembles a ball of fire more than anything else with which I could compare it. I have seen the Flame Tree of Illawarra and the brilliant scarlet masses of Erythrina laurifolia on the banks of Rewa in Fiji, but neither surpasses the effect produced by the floral display of this Eucalyptus."

A Weeping Hemlock Spruce.—A weeping form of this is described in the "Rural New Yorker." The habit is so decidedly weeping and the leaves and branches so thick that it was at once suggested to graft it upon high stocks, about the same, for instance, as the Kilmarnock Weeping Willow is worked upon the stock of which it is a variety, viz., Salix caprea. But the great expectations of securing an evergreen tree-form of unique and incomparable grace, thus reasonably entertained, have not been fulfilled. Mr. Samuel Parsons, of Flushing, writes as follows:—"We graft it readily upon high stocks in the nursery, but it does not thrive as well—the naked stem cracks and suffers, and the massive foliage, like most evergreens perched on high stems, is too heavy for grace and proportion, and is beaten and tossed by the winds."

LANDSCAPES OF THE GREAT PAINTERS.

CALAME—BORN 1810, DIED 1864.

No landscape painter ever seized upon the true characters of picturesqueness more happily than the Swiss painter Calame. He commenced his artistic career by colouring little prints of Swiss scenery at very low wages; but as he took the utmost pains with all he did, he gradually acquired a thorough knowledge of effects, both as regards form and colour, and at length felt sufficient confidence to attempt original subjects, instead of colouring or imitating the productions of others. Eventually he became, after many disappointments and some failures, one of the greatest landscape painters of his time, and his pictures, lithographs, sepias, and sketches in chalk are very numerous, though he did not achieve excellence till a comparatively late period of his career. His finest works are those belonging to his "specialty," the scenery of the high Alps, which he treated with a poetical feeling peculiarly his own. Among these works his "Monte Rosa after Sunset," the highest peaks of dazzling snow still receiving the rosy glow of sunrays, after all else in the landscape had sunk into the blue depth of twilight, is perhaps the most interesting, if not the finest, and forms one of the chief ornaments of the museum of Neufchâtel. Equally well known are "The Haendeck," "A Region of the High Alps after a Storm," "The Lake of the Four Cantos," his "Four Seasons," his "Mont Blanc," "An Avalanche of Rocks" (purchased by Louis Philippe), "A Tempest in a Forest of Oaks," and many others. Calame, though comparatively young when he died, lived to reap the just rewards of his talent and persevering industry. His residence in Geneva and his beautiful villa in its charming suburbs, became a rendezvous of distinguished men, and of the sovereigns and princes of Europe; and to pass through Switzerland without having enjoyed the privilege of a visit to the *atelier* of Calame, deprived such a tour of one of its cheerful and most coveted gratifications. The annexed example is from one of his works in black and white, the spirited and expressive pencilling of which, as in his various other works of the same class, exhibits a thorough mastery over the principles of effective treatment to which few have attained. It represents a group of Oaks growing on the margin of one of the smaller Swiss lakes. The treatment of the ramifications of the gnarled branches is admirable in its characteristic boldness, as is the effect of the flat-topped rocks, worn smooth by the action of the water, which stretches out to some distance in the shallows of the lake. This effect might be made to afford a hint to landscape gardeners under the following circumstances:—Let it be supposed that it is desirable to form a small lake in a stretch of park scenery where immediate effect is desirable, in which case full-grown trees are necessary; and as such trees cannot be transported to the edge of the artificial water, let the artificial water be made to approach the trees, if any exist in the neighbourhood of the situation where it is sought to introduce a more or less extensive expanse of water. Supposing a single tree or group of trees of picturesque character to be available as adjuncts to the outline of the water, an effect precisely similar to Calame's striking sketch might be easily produced; indeed, by the addition of natural masses of stone grouped together on nearly a level, and carried out to some little distance in the shallow water near the bank, almost



PAQUIER.DEL CALAME inv.t SARGENT.SC.

Landscapes of the Great Painters: Lake Scene in Switzerland.

a perfect fac-simile of Calame's picturesque drawing may be produced in living trees and real water within the short time necessary for excavating the bed of the pond or lake. Or if such a feature as a small lake already exist, but is bare or uninteresting as regards the banks, let its margin be extended till some such object, if available, be reached, so as to impart variety to some part of its shore. It is in this way that the more picturesque works of our great landscape painters might be used as hints or texts by a landscape gardener of taste and enterprise. Noel Humphreys.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Epiphyllums that were recommended some time ago to be stood out in a sunny position should at once be taken indoors; the stronger growers may occupy a shelf, or any other place for the winter where they can receive a moderate amount of light, with just sufficient water to keep them from shrivelling. The varieties of E. truncatum may be similarly treated for some time yet, but if required to flower early through the winter they must be placed in heat.

Berry-bearing Solanums that were in the spring planted out in the open ground should at once be taken up and potted; it is necessary to do this with as little breakage of the roots as possible, as their leaves, though not at all of a delicate nature, will be injured if the roots be mutilated to any considerable extent; to avoid this, if the ground be dry give it a good soaking the day previous to taking up the plants; 6-in. pots are quite large enough for winter-struck plants, or such as were raised from seed at the beginning of the year, but in the case of those that are older and were cut back before planting out, the pots should be a size larger. These Solanums require a good supply of water, consequently it is necessary to drain the pots well; any soil of fair quality and moderately porous will answer for them. On taking up pot at once, after which (different to the treatment advisable for most newly-shifted plants) give as much water as will thoroughly permeate the soil, and should they appear to require support put a small stick to the stem of each. If a frame or pit be at liberty it will be the best receptacle for the plants, shutting the lights down so as keep them somewhat close, shading the glass whilst the sun is upon it to obviate the necessity of giving much air. They should be damped overhead with the syringe once a day, and on no account allowed to suffer for want of water at the roots. If a pit or frame be not at disposal, stand them close under a north wall, where they will be completely out of the reach of the sun, and protect them with mats from the wind until they have got established; they must also be kept quite moist at the roots and syringed overhead. As soon as the roots have fairly commenced to grow in the pots they may be gradually exposed to the sun.

Veronicas, that were planted out in the spring with a view to their being taken up and repotted similarly, will need pots a size larger than for the Solanums, but in no case should they have more space allotted to them than the roots require without being too much cramped. If a portion of the plants have been prepared for successional flowering by stopping once during the summer, they will afford a continuance of blooms up to the end of the year. Treat them as recommended for the Solanums.

Campanula pyramidalis.—The white and blue varieties of these that have been out-of-doors through the summer should also now be taken up and potted: it is not advisable to give them all the room they will require, but put them for the present into pots of sufficient size to contain their roots and a moderate amount of soil, moving them early in the spring into others from 9 in. to 12 in. in diameter according to the size and vigour of the plants; see that their roots also are sufficiently moist before taking up, give them a moderate watering as soon as potted, and immediately transfer them to a frame where they can be kept tolerably close and shaded until they have commenced growth. They are nearly hardy in the south of the kingdom, and will merely require through the winter keeping in a house or pit from which frost and damp can be excluded.

Greenhouse Hard-wooded Plants.—In the north of the kingdom it will not be safe to allow Heaths or any other hard-wooded pot plants to remain longer out-of-doors, for even should no frost occur, they will be liable to suffer from too much rain; previous to taking such plants indoors, the pots should be well scrubbed, so as to give them a clean appearance through the winter. Where there is no house or pit for Heaths, they should be placed at the coldest end of the greenhouse, as near to the roof as possible, as they will bear more air directly in contact with them than New Holland plants, such as Pimeleas, Adenandras, Aphelexis, Chorozemas, Boronias, Correas, and Epacrises, which require more warmth, and should be placed at the opposite end of the house. In the southern parts of England such subjects as the above may be allowed to remain until the end of the month, unless there should be an indication of frosty nights. There is no better time in the year for potting spring and summer flowering Heaths than the present; but where any of these plants have to be shifted, it should be done immediately, for although they continue to make roots almost to the end of the year, still it is better to pot them at once, thereby affording them an opportunity of getting established in the new soil. The advantages gained in moving them now are that their flowering is not interfered with, and there is not nearly so much danger to the health of the plants as if they had been potted during the hot summer weather.

Kalosanthes should not be allowed to remain out any longer. These plants are especially adapted for amateurs, as they flower freely and do not suffer from slight inattention; but they are light-loving subjects, and through the winter should be accommodated with a position close up the glass.

Lilies.—Any plants of Lilium auratum, L. eximium, or other species that flowered early, and the tops of which are now dead, should be potted, as there is nothing like completing this work as soon as the plants go to rest, when their roots are in the most dormant condition; the size of the pots required should be regulated by the number of bulbs in each. An 8-in. or 9-in. pot is sufficient for a large bulb of L. auratum, giving more room where several are grown together; a 9-in. pot is quite large enough for three or four bulbs of L. eximium, or others of similar strength. Avoid the shallow potting too common with these plants, all of which emit a large number of roots from the young stem formed annually above the bulb, the top of which at the time of potting should at the least be 3½ in. or 4 in. under the soil. After potting keep the soil moderately moist and no more. A cold frame will suit them for some time to come.

Double Primulas struck in the spring and now occupying small pots should at once be moved into those in which they are intended to bloom. Moderate-sized plants grown in 6-in. pots are generally much more satisfactory than larger specimens requiring more room, and amateurs who have not had much experience with these most useful winter-flowering plants will find them far more manageable in pots of the above size than if larger, for they are somewhat liable to damp off unless they can be accommodated with a temperature of 50°, and are much more apt to do so when grown in a large body of soil than if more confined at the roots.

Wasp Nests and Cyanide of Potassium.—About this time of year wasps are great pests in gardens. All kinds of fruit on open walls and Grapes under glass are destroyed in great quantities by them. Traps placed about the fruit may catch a few, and cloth or net protectors may keep some of them off the fruit, but still, where they are plentiful, many of them will make their way to it. Under such circumstances no remedy is so good as killing them, and for this purpose nothing answers so well as cyanide of potassium. It is a poison, but may be procured from any chemist: use in the proportion of 1 oz. to half-pint of water; in this solution saturate a handful of cotton and insert it immediately in the mouth of the wasp-hole. The fumes soon reach the nest and destroy its occupants in less than an hour. When those outside come nearer the cotton than 1 ft., they fly round about it for a short time, and then fall to the ground. In two hours after inserting the cotton I have lifted them up in handfuls. I destroyed a nest to-day in this way without any trouble: a long narrow hole over 2 ft. in length led to the nest, and after the cotton was put in, this passage was so completely filled with dead wasps that the fumes could not penetrate to the nest, the entrance to which had to be cleared in order to let the cotton further in; 4000 dead wasps were counted from this nest alone, and there would probably be as many more uncounted. To be able to kill this number of wasps without more trouble than that just described is a great advantage.—A. B. Y.

Potato Hampshire Hero.—A really first early Kidney, positively earlier and larger than the Ashleaf; flesh and skin perfectly white, and boils as mealy as a Regent; top short and well adapted for pot, frame, or early border growth. This Potato will in time prove to be a veritable garden acquisition, and its tubers are good six months after lifting. It promises to become specially valuable as an early ripener and a long keeper.—A. D.

Vines from Gethsemane.—There is at this time growing, in more than one of the greenhouses in the vicinity of Hawick, young Vines which have been propagated from one growing in the garden of Gethsemane. They were struck in the early spring of this year from eyes which were brought to Hawick by one of our most liberal-minded and much-respected ministers.—"Scotch Papers."

SOCIETIES AND EXHIBITIONS.

CARLISLE INTERNATIONAL EXHIBITION.

September 6, 7, and 8.

This show collectively was a very large one, and, taking the adverse summer and the lateness of the season into account, the great bulk of the productions was of a meritorious character. Fine-leaved plants, including Palms, Tree Ferns, &c., as might be supposed, formed the most imposing part of the show, but there was also a number of flowering subjects, both hard and soft-wooded, interspersed amongst them. The names of those who competed for prizes, as well as of those who exhibited large groups not for competition—such as the leading London and provincial nurserymen, who came out in such force as seldom occurs—will convey an idea of the extent and importance of the show, which needed nothing but fine weather to have made it one of the most successful ever held in the provinces. The gathering of gardeners from both England and Scotland, with some from the Sister Isle, was the greatest we ever remember to have seen. The extent of the display may be imagined when we mention the size and number of the tents, which, in all but one or two cases, were fully filled. A large circular marquee 100 ft. in diameter was occupied by large plants; another tent leading from the entrance, 250 ft. by 50 ft., was similarly filled; the fruit and cut flower tent was 400 ft. by 30 ft.; the vegetable tent, 100 ft. by 30 ft.; that devoted to dinner-table decorations, 100 ft. by 40 ft.; one filled with different subjects was 100 ft. by 40 ft. The tent—300 ft. long by 40 ft. in width—wherein was most of the tender plants, was well warmed with hot-water pipes by Mr. Corbett, of Carlisle; the boiler employed was one of Hartley & Sugden's, of Halifax, wrought iron-welded. The heating of this tent was not a mere make-believe, as often occurs when tender plants are exhibited, but was quite warm enough to be agreeable, like, in fact, the temperature of an intermediate-house. There was a telegraph office erected on the ground. The whole of the tents were most effectually lit with gas from pipes running well above the plants, so as not to be in danger of injuring them.

Stove and Greenhouse Plants.—In the principal class for amateurs, twelve stove and greenhouse (six in flower and six fine-foliaged), from Mr. Thornber, gardener to T. M. Shuttleworth, Esq., Preston, had an easy victory, showing in grand perfection for so late in the season. His blooming specimens consisted of a beautifully-flowered Dipladenia insignis, Statice profusa, and S. imbricata, from 4 ft. to 5 ft. through, in excellent condition; Allamanda nobilis, covered with canary-coloured flowers; Ixora coccinea, and the finest pot specimen of the White Lapageria we have seen. The fine-foliaged plants were Gleichenia dichotoma and G. dicarpa, each not less than 8 ft. through, equally large and well-grown examples of Cycas circinalis, Phormium Colensoi variegatum, Croton majesticum, and Cordyline indivisa. Mr. Todd, gardener to A. B. Stewart, Esq., Glasgow, who was second, also had a good group; the best of these were Erica Aitoniana superba, E. Marnockiana, Ixora javanica, Gleichenia Speluncæ; the fine Palm Astrocaryum mexicanum, and the pendulous-fronded Tree Fern Alsophila australis Williamsi. In the class of six stove and greenhouse plants, Mr. Hammond, gardener to Sir W. Lawson, Brayton Hall, was first; amongst others he had a very finely-flowered Vallota purpurea, the good old Rondeletia speciosa, and a well-grown example of that most elegant of Palms, Cocos Weddelliana. Mr. Shand, gardener to the Earl of Lonsdale, Lowther, was second; he staged a well-flowered Erica Marnockiana, and a very large plant of Lilium speciosum, associated with well-grown, fine-leaved subjects. Mr. Scott, gardener to Gavin Steele, Esq., Bothwell, was first in the class of Crotons, amongst which was a fine example of C. irregulare; Mr. Hammond was second. In the class of six stove and greenhouse plants in flower, Mr. Thornber was first; noticeable in his collection was a well-flowered Ixora coccinea; also Anthurium Scherzerianum, bearing about three dozen blooms, and an equally fine Eucharis amazonica; Mr. Hammond was second, and Mr. Shand third. In the class of three Palms Mr. Thornber was again first, and Mr. Todd second, both showing clean, evenly-grown plants. Heaths came from Mr. Scott and Mr. Todd. Of six exotic Ferns Mr. Todd, who was first, showed in his lot the scarce Gleichenia Mendelli, G. semivestita, and Todea superba, large and in good condition. In the class for eight dinner-table plants there was a spirited and very close competition between the first and second prize collections, Mr. Thornber getting first with a fine group, light and airy in appearance, as these always should be; Mr. Todd was second. Nine stove or greenhouse plants in 12-in. pots were shown in excellent condition, though not very large; Mr. McIntyre, gardener to A. A. Richardson, Esq., Lisburn, Ireland, was first; his most meritorious plants were Encephalartos villosus, Latania borbonica, and Dracæna Baptisti, still one of the best. In the class of four Dracænas the first prize was awarded to Mr. Hammond, who exhibited beautiful examples of D. amabilis, D. Mooreana, D. Baptisti, and D. Reginæ; Mr. Blackwood, Eden Hall, made a close second, and Mr. Todd was third. For twenty stove and greenhouse plants (nurserymen) Mr. Troughton, manager to the Preston Nursery Co., was deservedly awarded the first prize; his collection consisted of lofty Tree Ferns, Palms, a beautiful example of Croton Weismanni and C. majesticum, Cycas circinalis in fine condition, and a large and finely-flowered Lapageria rosea, Erica Austiniana, E. æmula, and E. Marnockiana, fresh and evenly bloomed; Eucharis amazonica and Phœnocoma prolifera. Messrs. J. & R. Thynne, Glasgow, were second with a fine collection, containing the beautiful Croton Johannis, the weeping Cyathea Burkei, a stately Areca Baueri, and Dasylirion glaucescens; this group was not so well furnished with flowering plants as the first prize lot. In the class of six Orchids (nurserymen) Mr. B. S. Williams, Victoria Nursery, Upper Holloway, was first with a finely-flowered example of Oncidium Marshalli, and a very fine variety of Odontoglossum Alexandræ named O. A. fimbriata. Mr. Pattinson, Carlisle, was second.

New Plants (fine-foliaged) in 12-in. pots.—Mr. Todd, who took the lead, showed a very effective group, in which Macrozamia Mackenziei and Adiantum gracillimum were conspicuous; Mr. Hammond was second. In the competition for Mr. Bull's cups, given for twelve new plants sent out since the commencement of 1874, Mr. Thornber was again first; his group contained Plectocomia Andersoni, Encephalartos villosus ampliatus, the very distinct Tree Fern Sadleria cyatheoides, Todea intermedia, Croton Disraeli, Aralia elegantissima, and a nicely-flowered Dipladenia Brearleyana; Mr. Hammond, who was second, staged a good collection of smaller plants; Mr. McIntyre was third. In the class of twelve new plants not yet in commerce, Mr. Bull, King's Road, Chelsea, was first, and Mr. B. S. Williams second. Messrs. Veitch, of Chelsea, and Mr. B. S. Williams, each staged groups of new and rare plants, amongst which the Nepenthes, Sarracenias, and Orchids were in beautiful condition; these two exhibits formed such an assemblage as is not often seen. Messrs. Ireland & Thomson, Edinburgh; Little & Ballantyne, Carlisle; R. P. Kerr & Sons, Liverpool; J. Dickson & Sons, Chester; R. Thyne, Glasgow; R. Pattinson, Carlisle; Clarke & Co., Carlisle; T. Armstrong, Carlisle; Barron & Sons, Borrowash; and the Preston Nursery Company also staged some extensive collections. Amongst these we noticed Cattleya Sedeni, a cross between C. devoniensis and C. superba; its sepals and petals are rosy-purple, while the whole of the labellum is of the deepest crimson with a shade of maroon; it beats Lælia Turneri completely out of the field. Sarracenia Chelsoni, Nepenthes hybrida maculata major, N. Rafflesiana pallida, and Athyrium Goringianum farinosum all received first-class certificates. A number of plants of a very distinct race of hybrid Begonias were shown by Messrs. McClelland & Co., Newry; they were quite equal to any we have seen, one especially, named International, bore flowers of great substance, and of the most brilliant crimson; the foliage may be described as that of a miniature B. manicata, but not at all coarse; another, named Cleopatra, was magenta-crimson, dwarf and compact, the leaves being nearly hidden by a profusion of flowers; Firefly, a striking sort, had flowers almost circular in outline. A new Croton, called Etna, was a brilliant kind, with medium-sized leaves, somewhat smaller than those of C. pictum; the young leaves are green and yellow, assuming, as they get older, the brightest crimson. Unfortunately these plants did not arrive until the second day of the show, or no doubt they would have been awarded first-class certificates.

Dinner-table Decorations.—A large tent was wholly filled with these. The first prize (a 25-guinea cup given by Lady Musgrave, Eden Hall) was won by Mr. Cypher; the second was awarded to Mr. Shand, whose table was the heaviest in the competition; third, Mr. Lewen, gardener to Colonel Buchanan, Drumpellier.

Cut Flowers.—Amongst these Roses stood in the front rank. For twenty-four, the executors of the late John Harrison, Darlington, were first, with flowers that would have been considered highly creditable much earlier in the season; second, Mr. H. Dickson, Belfast; and third, Mr. Smith, Stranraer. For twelve Roses, Mr. Burrell, Darlington, was first with a good dozen; second, Mr. Summers, gardener to C. W. Scott, Esq., Dumfries; Mr. A. Kirk, gardener to Mrs. Mackie, Castle Douglas, was third. Messrs. Cranston & Mayo, Hereford, exhibited some beautiful Roses not for competition. For twenty-four Dahlias (nurserymen)—Messrs. Dickson & Sons, Belfast, were first with a beautiful exhibition; Mr. Thompson, Fenham, was second; and Messrs. Little & Ballantyne, Knowefield Nurseries, Carlisle, third. Twelve Dahlias (nurserymen)—Messrs. Dickson were first, and Mr. Thompson second. Dahlias were also forthcoming from amateurs in considerable quantities. For twelve blooms, Mr. J. Paterson, Carlisle, was first with a well-matched dozen; Mr. W. Veitch, Carlisle, was second. Phloxes were in beautiful order, showing how well they stand a wet season. For twelve, Mr. Summers took the lead with a very good stand; Mr. Postlethwaite was second. Eighteen Gladioli came from Mr. R. Gray, Kilkerran Castle, Ayrshire, who staged a beautiful lot which received the first prize (amongst these were some of the very finest examples of this showy autumn flower which we have ever seen); second, Mr. McDougall, Grasmere. A large number of bouquets were shown, varying much in merit. Brides' bouquets were shown by Mr. Perkins of Leamington, Mr. Cramont of Sunderland, and Mr. Cypher of Cheltenham, to whom prizes were awarded in the order in which their names stand. Mr. Perkins was also first in the class for three hand bouquets with equally handsome productions, Messrs. Turner of Liverpool being second, and Mr. Cypher third.

British Ferns came from Mr. Craig, gardener to the Hon. Mrs. Howard, Levens Hall, who showed distinct and well-grown kinds, to which a first prize was awarded; second, Mr. Graham, gardener to J. Allan, Esq., Moffatt. Messrs. Barron & Sons, Elvaston, obtained the first prize for Coniferous plants; second, Messrs. Dickson & Turnbull, Perth.

Fruit was shown in large quantities. In the principal class of sixteen dishes, Mr. Coleman, gardener to Earl Somers, Eastnor Castle, was deservedly first. This collection comprised beautifully-finished Black Hamburgh, Muscat of Alexandria, Black Morocco, and Madresfield Court Grapes; good black Jamaica and smooth Cayenne Pines; Bellegarde and Galande Peaches; Pitmaston and Elruge Nectarines;

Eastnor Castle and Golden Gem Melons; Diamond Plums; Morello Cherries; Brown Turkey Figs, and Jargonelle Pears—all good, and even in quality. Mr. Johnson, gardener to the Earl of Strathmore, Glamis Castle, was second. In Grapes he had rather the advantage over his opponent; his Muscats, Black Alicante, and Gros Guillaume were very fine, but in other fruits there was somewhat of a falling off, nevertheless it was a very meritorious exhibition. Mr. Ingram, gardener to the Duke of Northumberland, Alnwick Castle, was third. His best examples were Queen and Charlotte Rothschild Pines—very fine fruit; Muscat of Alexandria Grapes; Royal George and Violette Hative Peaches. In the class of twelve dishes Mr. H. Wallis, gardener to Sir H. Thompson, York, was first with amongst others good Muscat of Alexandria and Black Hamburgh Grapes, Royal George Peaches, and Brown Turkey Figs. Mr. McKelvie, gardener to the Duke of Roxburgh, Broxmouth Park, was second; he had fine Muscat of Alexandria Grapes, Walburton Peaches, and Violette Hative Nectarines. Mr. Upjohn, gardener to the Earl of Ellesmere, was third; and Mr. Dixon, gardener to J. Whyte Melville, Esq., St. Andrews, was fourth. In the class of ten dishes (Pines and Grapes excluded), Mr. Shand was first; and Mr. H. Graham, second.

Pines.—First, for Queen, Mr. Ingram, who showed a couple of fine fruit; second, Mr. Sandford, gardener to the Earl of Bective, with a pair little inferior. Two Pines (any other variety)—First, Mr. Coleman. Heaviest Pine—First, Mr. Sandford.

Grapes.—Eight varieties (one bunch each)—Mr. G. Reid, gardener to A. H. Moncur, Esq., Dundee, who was first, staged a really fine lot including Muscat Hamburgh, Muscat of Alexandria, Lady Downes, Black Alicante, Black Hamburgh, Mrs. Pince, and Gros Colman with very large berries; the bunches stood upon the stands as firm as possible, not a berry moving from its place, the only fault being the predominance of Black kinds; Messrs. Lane, Berkhamsted, who were second, also had a good collection, the best were Bowood and Alexandria Muscats, Alicante, and Gros Colman. In the class of four varieties (one bunch each) Mr. Hammond was first and Mr. Coleman second, both exhibiting good examples; third, Mr. R. Kirke, who had large bunches. In the class of Black Hamburghs (two bunches) the first prize (a silver cup, value £5 5s., presented by Messrs. Boyd & Sons, Paisley) was awarded to Mr. Coleman for well-finished clusters; second, Mr. Upjohn, who had larger bunches but not so well coloured. Muscat Hamburgh (two bunches)—first, Messrs. Lane; second, Mr. Smith, gardener to the Countess of Stair. Madresfield Court (two bunches)—first, Mr. Fraser, Stobo Castle; second, Mr. Harrison. Black Alicante (two bunches)—first, Mr. Hammond, who showed that variety with larger berries than usual; second, Mr. J. Curror. Lady Downes (two bunches)—first, Mr. Hammond, the berries in this case being unusually long; second, Mr. Fraser. Mrs. Pince (two bunches)—first (a silver tea-service value £6 6s., presented by Messrs. Mackenzie & Moncur, Edinburgh and Glasgow), Mr. Reid, who showed bunches in every way good; second, Mr. Hammond. Any other Black Grape (two bunches)—first, Mr. Hammond; second, Mr. Ferguson, gardener to B. Shaw, Esq., Selby. Muscat of Alexandria (two bunches)—first, Mr. McKelvie, with clusters fine in every way; second, Mr. Ferguson; it is worthy of remark that Muscats were relatively much better coloured than the Black kinds. Duke of Buccleuch (two bunches)—first, Messrs. Thomson & Sons; second, Mr. Fraser. Any other White kind (two bunches)—first, Mr. Curror, with Buckland Sweetwater; second, Mr. Anderson, gardener to the Earl of Stair. Black Alicante (one bunch)—first, Mr. Mason, Dumfries; second, Mr. Paterson. Lady Downes (one bunch)—first, Mr. Reid. Barbarossa (one bunch)—first, Mr. Ferguson. Muscat Hamburgh (one bunch)—first, Mr. Reid, a fine bunch and a good example of successful Grape-growing. Any White kind (one bunch)—first, Mr. Kirk, with Buckland Sweetwater. Heaviest Bunch of Black Grapes—Alicante, 13 lb., first, Mr. Dickson, gardener to J. Jardine, Esq.; second, Mr. Hammond. Heaviest Bunch White Grapes—first, Mr. Dickson, with Syrian, 9 lb. One bunch of Black Grapes, finest bloom (not less than 1 lb.)—first, Mr. Lees, gardener to the Marquis of Downshire, Hillsborough Castle, Ireland, with Cooper's Late Black, which appears to be a distinct variety, the bunch of which is smallish, with moderate-sized berries, like a rather long form of Hamburgh, black as a Sloe, and profusely covered with bloom.

Peaches.—First, Mr. McFarlane; second, Mr. Fox.

Nectarines.—First, Mr. Hanagan, gardener to R. C. Naylor, Esq., Cheshire; second, Mr. J. Dickson.

Apples, Pears, and Plums, as might be supposed, were scarce, and only moderate in quality.

Vegetables were shown in great quantities and in good condition. For twenty dishes Mr. Sandford was first, and Mr. Nicholl second. Potatoes, notwithstanding the disease which is making such havoc in the north, were produced in fine condition, in fact, too much cannot be said in praise of the vegetables collectively.

There was an extensive display of hothouses, boilers, and garden appliances of all descriptions, covering a considerable extent of ground.

Clearing Runners from Strawberries.—Runners should be cleared away at once; for not only do they exhaust the soil uselessly, but they do harm in other ways, especially by overcrowding the main foliage on the permanent plants, and so in a measure weakening the crowns for next year's supply.—E. H.

ALEXANDRA PALACE FRUIT SHOW.

September 13, 14, and 15.

At this exhibition fruit was well represented, notwithstanding the bad season which we have experienced. Of collections, the best came from Mr. Coleman, gardener to Earl Somers, Eastnor Castle, who had remarkably well-finished bunches of Muscat of Alexandria, Black Hamburgh, and Lady Downes Grapes, the berries and bloom in all cases being perfect; a smooth Cayenne Pine-apple, well ripened, and weighing from 5 lb. to 6 lb., together with two good, finely-coloured Melons, Early Crawford Peaches, Pitmaston Duchess Pears (ripe and good but rather small), Figs, Plums, and Cherries. Next in point of merit was a collection from Mr. Bannerman, gardener to Lord Bagot, in which were good examples of Duke of Buccleuch, Black Alicante, Gros Colman, and Black Hamburgh Grapes; very fine Barrington Peaches, Queen and Black Prince Pine-apples, and Morello Cherries. In smaller collections, Mr. J. Neighbour sent good examples of White Magnum Bonum Plums, and Violette Hâtive Peaches; and in the same class we remarked good fruit of Kirke's Plum and Bellegarde Peaches. In the class of eight varieties of Grapes, the best came from Messrs. Lane & Son, Berkhamsted. They consisted of large and well-finished bunches of Muscat of Alexandria, Gros Colman, Bowood Muscat, and Golden Queen, the latter being, however, too unripe to be able to judge fairly of its character, but both berries and bunch were all that could be desired. The next best exhibition of Grapes came from Mr. Wildsmith, gardener to Lord Eversley at Heckfield, who had larger bunches than Messrs. Lane, but not quite so good in berry or finish: among them were large clusters of Barbarossa, White Tokay, Trebbiano, and Black Hamburgh. The best three bunches of Black Alicante came from Mr. Josiah Freeman, Beechwood Park, Dunstable; these were in all respects remarkably fine, the bunches being symmetrical in shape, large as regards berry, and beautifully coloured. From other growers also came good examples of the same variety. Madresfield Court Grape was shown, but here as elsewhere it was wanting in colour—the best came from Mr. J. Chard, Clarendon Park. The best examples of Buckland Sweetwater came from Mr. J. Bain, Downton Hall; Mr. Miles also had fairly good examples of this variety. The best three bunches of Black Hamburghs came from Mr. Coleman, the berries in which were the best coloured of any we have seen this season. Very fine bunches, though not so well coloured, came from Mr. Coomber, Hendre Park, Monmouth. In the class of three bunches of Muscat of Alexandria, Mr. Coleman was again first with well-ripened and excellent examples, and Messrs. Lane & Sons sent bunches but very little inferior; several other exhibitors, too, had remarkably good fruit of this Grape. Lady Downes Seedling was well shown by Mr. Wright, Thurleston Lodge, Ipswich, Mr. Chas. Tyler, Bishop Stortford, and others. The best-flavoured bunch of Black Grapes came from Mr. Bannerman, who showed a small but well-ripened cluster of Black Hamburgh, and the best-flavoured White Grape was Foster's Seedling, from Mr. Taylor, Hampstead Heath. The best bunch of Black Alicante came from Mr. J. Peed, Norwood Road, and Mr. Wildsmith, Heckfield, had the best bunch of Black Hamburgh. The heaviest bunch of Black Grapes (Barbarossa) was shown by Mr. J. Peed, the next by Mr. Wildsmith, whose bunch weighed 5 lb. 9 oz.; Mr. Wildsmith also had the heaviest bunch of White Grapes (White Nice). For ornamental baskets of Grapes Mr. Coleman was first with finely-coloured clusters covered with bloom; a fine basketful was also shown by Messrs. P. & S. Kay, Finchley. Mr. Coleman was likewise first for the best bunch of White Grapes, which consisted of a remarkably fine cluster of Muscat of Alexandria; Mr. Thomas, Oakleigh Park, had also well-ripened bunches, but not so large in the berry as those from Eastnor Castle. Altogether White Grapes were of unusually good quality. The best pair of smooth Cayenne Pines came from C. Ross, gardener to C. Eyre, Esq.; they weighed respectively 7 lb. 6 oz., but they were not ripe. The best Queens came from Mr. Churchfield, Westwood House, Sydenham. Single dishes of Plums—black, red, and yellow—were shown in quantity, as were also Figs and Peaches. The best Plums (any sort) came from Mr. Haycock, who showed very large, ripe examples of transparent Gages, Belgian Purple being the next best kind. In collections of fruit from which Pines were excluded were also good Peaches, Plums, and Figs, the best of which came from Mr. Cox, gardener to Lord Beauchamp. A dish of Greengage Plums came from Mr. Fry, Eastcott, Pinner, who obtained the first prize. The best dish of Kirke's Plum was shown by Mr. Murrell, and a good dish of Jefferson came from Mr. Pragnell. Mr. Chisholm, Maidstone, sent the best Figs; other exhibitors also showed fruit of first-rate quality. Mr. Coleman furnished the best dish of Peaches (Royal George); they were of unusually large size and well-coloured. Mr. Miles had a good dish of Crawford, and a kind named Exquisite, of an apricot colour, was well shown. The best Nectarines were Pitmaston Orange, the finest fruit of which came from Mr. Coomber, Hendre Park, Monmouth. Of Melons there were thirty specimens, the first prize for the best Green-flesh was won by Mr. Holder, Maidstone, with a small fruit of Bromham Hall; to a small fruit of Read's Scarlet-flesh, sent by Mr. Bain, was awarded the first prize for a Scarlet-fleshed Melon. Among Kitchen Apples the best appeared to be Lord Suffield, Hawthornden, Cox's Pomona, and Alexandra. The best collection of Apples came from Mr. Goldsmith, Sandhills, Surrey, who had large, clear-skinned fruit of some of the best kinds. The best dessert Apples fit for table came from Mr. C. Haycock, Barham Court, Maidstone; they consisted of Summer Golden Pippin, Kerry Pippin, and Red Quarrenden.

Vegetables were well represented, collections of sixteen varieties, as well as smaller collections, being shown in great numbers. The best came from Mr. Pragnell, Sherborne Castle, who had remarkably fine examples of Model Potato, Sherborne Improved Onions, large heads of Cauliflower, Tender and True Cucumber, Canadian Wonder Beans (fresh and young), good Celery, Cardoons, Leeks, and Tomatoes. The next collection in point of merit came from Mr. Arkell; it comprised good Capsicums, Mushrooms, Tomatoes, Peas, &c. An equally good collection was furnished by Mr. Miles, Wycombe Abbey, who had very large Tomatoes and Onions, good Beans, and Brussels Sprouts. Good collections of salad vegetables were shown, consisting of Endive, Lettuces, Cucumbers, and others used for that purpose.

Miscellaneous Subjects.—Roses were for the season well represented in a cut state. A good collection of them came from Messrs. Cranston & Co., Hereford, in which were all the best autumn-blooming kinds. Messrs. Paul & Son had also an excellent collection, as had likewise Mr. Cross, Oxford. Messrs. Wm. Paul & Son also sent several stands in good condition, and from Mr. Rumsey, Waltham Cross, came a small collection of Roses. Mr. Chas. Turner, Slough, sent a group of Lilies in flower in pots. Messrs. Paul & Son sent small pyramid Apple trees in baskets loaded with fruit, in order to show the advantage of small trees in seasons like the present. Cut blooms of Asters were shown in good condition by Mr. John Morgan, Wray Park, Messrs. Saltmarsh & Son, Chelmsford, and others. A good stand of cut blooms of Verbenas came from Mr. Dobree, Somerset. Dahlias, which occupied a large table, were in every respect good. They came from Mr Keynes, Salisbury, and Mr. Dobree. Good kinds were also contributed by other well-known growers.

In the dinner-table decoration department only three exhibitors presented themselves. The first prize was awarded to Mr. W. Soder, gardener to O. Hanbury, Esq., who had light and tastefully-arranged stands, consisting of Vallotas, Water Lilies, Eucharis, and other flowers, Ferns, and Grasses, and six dishes of fruit effectively laid in Fern. The second prize was awarded to Mr. Chard, Salisbury, who had a good showy table, but the flowers were too heavy; the centre piece consisted of a Cocos Weddelliana, draped with Lapageria rosea, the base being covered by a group of Vallotas, Lilies, &c.; the side stands, which were of glass, were filled with Ferns and flowers of a light description. Wedding bouquets were sparingly represented, but a very neat one, composed of Eucharis amazonica, Odontoglossum crispum, Stephanotis, Roses, and Maiden-hair Fern, was shown by Miss E. Stuart, Holloway.

The New Early Peaches.—It was stated in The Garden last month that the Early Beatrice Peach and Early Rivers have seen their best days as far as American cultivators of early Peaches are concerned. Their Early Alexander Peach ripens ten days before the Early Beatrice, and is said to be of far better quality and size, fetching 15 cents per lb. while the Beatrice would not sell for 1 cent. Their Early Amsden is likewise found to ripen as early or earlier than the Beatrice, and to be of better quality. The Maryland Early Peach is another variety, measuring from 8 in. to 8½ in. in circumference, and is stated to be excellent in flavour. I know that Hales' Early Peach is a good variety here, and it would be a great boon to growers if the early sorts just named were imported for trial. The Early Beatrice is at best but second-rate in flavour, of small size, travelling badly, and only fit for growing in pots to furnish dishes of Peaches very early. The Early Rivers I shall discard, for after fruiting it three or four years, I find it to crack at the stone and to be poor in flavour. The Early Louise is an excellent early Peach, and worthy of being extensively grown. Hales' Early is of better quality than Early York, and ripens a week or two earlier. Perhaps one of the very best early Peaches is the Grosse Mignonne, when true. It is succeeded by the Malta, an old variety of the Noblesse section, but the most deliciously flavoured of all Peaches.—Wm. Tillery, *Welbeck.*

Ascent of Water in Plants.—This was the subject of a paper read by Prof. M'Nab at the recent meeting of the British Association. Experiments made by him, and the results of which were published some time since, showed that the rapidity of the ascent of water in the xylem of the stem of a plant was nearly 40 in. an hour. Since the publication of the result Prof. Pfitzer, of Heidelberg, has made many experiments on the movement of water in plants. By him three methods were adopted. He first experimented by observing how soon leaves which had become flaccid from want of water regained their normal position when fed with the liquid. His second experiment was simply a repetition of that initiated by Prof. M'Nab, viz., he used lithium, which could be detected with the spectroscope, instead of water. His third series of experiments combined both the other methods, and as a result of them it was found that in the Sunflower the velocity of the ascent of water in the xylem was nearly 22 metres per hour—that is, one-third of a metre, or 13 in. per minute. Later on, however, Prof. Pfitzer adopted a new method, suggested by Prof. Koehne. He substituted a solution of indigo and carmine, such as is extensively used by microscopists for water and lithium, and the results obtained by means of it corresponded precisely with those recorded by Prof. M'Nab, whose method of experimenting was adhered to. An important source of possible error in conducting these experiments has, however, been pointed out by Prof. Koehne, who has shown that the air or gases in the vessels of the wood of transpiring shoots are in a state of diminished tension. Shoots cut under mercury in a few minutes exhibit a rise of mercury in the stem of from 20 to 38 centimetres. In the Sunflower the tension of the air in the vessels equals 46 centimetres of mercury. This rise of mercury or other fluids in the vessels, due to diminished tension, Prof. M'Nab styles the abnormal current through the xylem. If the abnormal current were more rapid than the normal, experimenters might be led into grave errors, but Prof. M'Nab showed that there was demonstrative evidence that this condition does not exist.

NOTES AND QUESTIONS—VARIOUS.

Zinnias—In order to have good flowers of these, the plants must have rich soil and some liquid manure should also be given them occasionally. I have recently seen some cut blooms of Zinnias rivalling the Ranunculus in size, fulness, symmetry, and richness of colour. If compilers of schedules of prizes at flower shows would strike out Verbenas, which are generally poor things as cut flowers, and substitute Zinnias, the exhibition would thereby be the gainer.—D.

Dahlias unlifted.—Dahlias are certainly not benefited by being annually lifted and dried. Last winter, as we all know, was exceptionally wet, and although we left all our Dahlia roots in the open ground, merely covering the crowns with coal ashes, not a single failure has occurred, and I never remember seeing them so luxuriant or floriferous as they now are. In shrubbery borders we have had them left out for several winters without any protection in the way of external coverings.—J. Groom, *Henham.*

Plants in the Paddington Canal.—Within the last few days I have gathered, within a mile of Westbourne Park Station, the following notable plants in the Paddington Canal:—Flowering Rush (Butomus umbellatus) and the Arrow-head (Sagittaria sagittæfolia). Both were in flower. None of the floras of London give so near a station for the Butomus. The first mile of the canal, after passing the Kensal Green, is certainly better than the next two, which are, in fact, absolutely barren.—Rusticus, in "Bayswater Chronicle."

Plants for Wardian Cases.—Mr. Alfred Burton (see p. 244) will find some of his questions answered in my article on "Heated Plant Cases" which appeared in The Garden for July 21. Adiantums and Todeas might be grown in such a case as he describes, but they could not be successfully associated, as the climatic conditions requisite for their cultivation are very different. Selaginellas are most accommodating, and would do well with either of the above species of Ferns. Cephalotus follicularis grows well in a plant-case, and so, no doubt, would Darlingtonia californica, Sarracenia purpurea, and Nepenthes, though I have no experience of these, and should think that they would be found too large for a case of the dimensions given. One of the very best Palms for a case is Areca lutescens. Variegated Begonias will grow almost anywhere. Tradescantia zebrina and Ficus repens are excellent trailing plants for the purpose. I should imagine that a Dicksonia antarctica small enough for the case would not be a very characteristic or desirable specimen; Cypripediums, Odontoglossums, and Oncidiums may all, with due care, be cultivated in a warm plant-case, the first-named planted in the bed of soil. and the others in baskets. I have no experience of Cœlogyne cristata, and cannot recommend Cattleyas for the purpose. A small circular aquarium might be placed in the centre of the case, but it would, in my opinion, be as great an eyesore as the diminutive washhand-basin ponds which disfigure some gardens; however, it is a matter of taste, and no doubt many small water plants could be well grown in this way. The best way of making an aquarium fountain is to bring a small pipe from a cistern.—Boverton Redwood.

Fertilization of Alpine Flowers by Insects.—In my last article on Alpine Gentians, I supposed that the chief, if not the only fertilizer of G. bavarica and verna might be Macroglossa stellatarum with its proboscis of 25-28 mm. length. Yesterday, near the Albula pass, I was fortunate enough to confirm this supposition by direct observation. Altogether I saw five specimens of Macroglossa stellatarum at work, one on Gentiana bavarica and verna, three on Primula integrifolia, and one on Viola calcarata, each of them in a few minutes fertilizing some hundreds of flowers. For instance, the last of my five Macroglossa specimens, which I observed with the watch in my hand, in less than 4 min. visited 108, and in other 6¾ min. 194 flowers of V. calcarata. As an illustration to what I have said in a former article on Alpine Orchids generally being adapted to cross-fertilisation by Lepidoptera, I may mention that near my present domicile there grow nine species of Orchids, eight of which (Nigritella angustifolia, Platanthera bifolia, Grymnadenia conopsea, odoratissima, albida, Habenaria, viridis, Orchis globosa, and ustulata) are adapted to cross-fertilization by Lepidoptera, whilst only a single one (Orchis latifolia) is adapted to cross-fertilization by other insects.—Hermann Muller, *Wissenstien, Albula Valley, Switzerland*, in "Nature."

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> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

GARDENING IN THE LONDON PARKS.

FLOWER GARDENING in our public parks has this year been as efficiently carried out as usual, although the season has not been one of the best for the proper development of the plants. In Victoria Park, however—the worst situated as regards smoke—the trees, especially the Hollies and Willows, for which this park is noted, are in unusually good condition. Hawthorns are heavily loaded with berries, and well-established table-shaped trees, isolated beside the lake, are well worth the attention of visitors. In the herbaceous borders the double yellow flowers of Helianthus multiflorus fl.-pl., associated with masses of the stalwart, brilliant scarlet Tritoma Uvaria, have a striking effect from many points of view. These borders are also gay with Lilies, Gladioli, Antirrhinums, and many other flowering plants, judiciously intermixed with fine-leaved subjects, such as Tobacco and Castor-oil plants, and Solanums; the Golden-leaved Catalpa, too, is used here with good results along with Acacias, Cannas, and similar plants. Giant Hemps may also be seen interspersed here and there amongst the shrubs, and with excellent effect. What is termed carpet gardening is this year well carried out here, though the designs are less complicated than usual, and the colours more subdued. One of the most effective beds has for groundwork Mentha Pulegium gibraltarica, edged with two rows of Echeveria secunda glauca placed 1 ft. apart, the intervening space being filled with dwarf green Sedums, evenly-sized plants of Sempervivum tabulæforme being inserted at intervals amongst them. The central portion consists of Alternantheras, Golden Feather, Mesembryanthemum cordifolium variegatum, and small Sempervivums, set out in neat designs. Amongst beds of flowering plants, a few are well worth attention, though the recent rains have somewhat marred their beauty, especially in the case of Pelargoniums and Verbenas. Sub-tropical and other fine-leaved plants have not grown here quite so freely as they did last year, but there are, nevertheless, several very effective combinations of them. A large clump of Aralias, Acacia lophantha, Ficus elastica, Wigandias, Golden-leaved Abutilons, Eucalyptus globulus, and others, is very effective, as are also round beds of Tobacco plants edged with Beet-root and Echeverias. A mass of Acacia lophantha planted thinly amongst Stellaria aurea has a fine appearance, and beds of Amarantus salicifolius are likewise very brilliant, although the plants have not this season attained their usual height. Groups of Erythrina Crista-galli will shortly be in full bloom, and green-leaved Cannas, edged with white-leaved Solanums, have a fine effect. Castor-oil plants have done fairly well, and so have Wigandias, which are planted in masses by themselves in sheltered positions.

In Hyde Park perhaps the most striking features are the carpet beds along the side of Park Lane, which look fresh and gay compared with the dusty-leaved Pelargoniums and Calceolarias under the trees next the road. When grown under trees Pelargoniums and similar plants are never satisfactory: fresh green turf would be preferable. Even a few carpet beds would be more appropriate, inasmuch as the plants used in them are better able to withstand rain than flowers, and moreover should they get dusty, it can be readily washed off with a watering pot. One of the most striking beds is planted with Golden Feather Pyrethrum, on which are embroidered triangular and diamond-shaped designs composed of Coleus Verschaffelti splendens and Perilla, the whole being edged with Alternantheras and Echeveria secunda glauca. Between the beds, in the form of isolated specimens, are Palms and other fine-leaved plants, and large Sweet Bays, in tubs. Another pretty bed consists of Pelargonium Manglesi and Viola Bluebell, the colours of which contrast effectually with an edging of Alternantheras and Blue Lobelia. A mixture of Gazania splendens and Iresine Lindeni makes a showy mass edged with Blue Lobelia, Alternanthera, and Mesembryanthemum cordifolium. Sub-tropical plants have not done well here this season, and many of them have been removed indoors some time ago. Musas, Castor-oil plants, Wigandias and in the "dell" at the head of the Serpentine are sadly disfigured by wind, clearly showing that the position is not a good one for them, at least in cold seasons. Large Palms, too, look very brown and unhappy, and would be better exchanged for something of a hardier character.

In Battersea Park the sub-tropical plants are this year in excellent condition, scarcely a brown leaf being observable on any of them; even Musas of large size have escaped the cutting winds. In shady nooks under trees may be found Dracænas, Cycads, Arecas, and other Palms, together with large Tree Ferns and Screw Pines, all in luxuriant health. Plants of the Crimson-flowered Hibiscus placed in recesses and backed up by shrubs look at a distance not unlike groups of single-flowered Camellias; mixed with other plants such as Yucca aloifolia and Golden-leaved Abutilons these Hibiscuses are very effective. A large bank planted with groups of the fine-leaved Jacaranda mimosæfolia and Acacia lophantha, surrounded by Abutilon Darwini tesselatum, Eurya latifolia variegata, India-rubber plants, and scarlet-flowered Begonias, constitute an effective feature, as do also round clumps of Acacia lophantha, Japanese Maize, and variously coloured Lantanas. The Golden-leaved Elder and Catalpa are used with good effect in raised positions. One of the prettiest beds consists of a groundwork of Vitis heterophylla variegata, edged with Japanese Honeysuckles, Alternantheras, and Silver Sedums with neat plants of Grevillea robusta placed at intervals, also Ficus rubiginosa. Large beds of Fuchsias of various kinds are unusually effective, the plants being from 2 ft. to 3 ft. high and heavily laden with bloom, the undergrowth being variegated Veronicas edged with Euonymus japonicus aureus variegatus. Cannas are in full bloom, and contrast well where grown on banks with glossy dark-leaved Hollies and overhanging Maples. A recess, filled with Silver-leaved Maples (Acer Negundo variegatum) alternately with Rhus glabra laciniata, and Tree Carnations with an undergrowth of Coleus, is strikingly effective, the edging consisting of yellow-leaved Pelargoniums (Creed's Seedling), and the Silver Sage (Salvia argentea). Carpet bedding is carried out here in its usual excellence, the best beds being those planted with Alternantheras and other coloured plants with specimens of Dasylirions and similar subjects planted amongst them. A good arrangement is that made against the lodge near the river. Here a semicircular bank is planted with Pelargoniums, Ageratums, and similar plants, the background being White Dahlias; on the turf in front of this are well-arranged carpet beds, and isolated specimens of Palms, Agaves, and other ornamental-leaved plants, the whole being very effective. S.

Ornamental-leaved Maples.—The following notes, respecting some of the handsomest of the Acer family, have been sent to us by Mr. Berry, of Longleat:—Acer platanoides Lorbergi.—This beautiful new variety of Maple well deserves special notice on account of its richly-coloured foliage and free habit of growth. Its leaves, when newly unfolded, are a bright reddish-purple, not much inferior as regards brilliant colouring to A. polymorphum rubrum. It will, I think, make a highly ornamental tree, and form a beautiful contrast to Acer pseudo-platanus corstorphinense, the foliage of which is yellow when fully opened in spring. A. Wagneri laciniatum.—This is a fine, free-growing Maple, with beautiful, large, glossy, bright green foliage, which becomes richly coloured in autumn. A. platanoides laciniatum.—This peculiarly cut-leaved variety is not quite so vigorous a grower as the last-named. Its leaves are deeply cut and turned in at the points, giving them an appearance like that of an eagle's foot. A. platanoides dissectum.—This is another fine, cut-leaved Maple, which is well worth knowing. A. platanoides Schwedleeri.—This somewhat resembles the kind last mentioned, but its leaves are a little larger, and it appears to be a more vigorous grower. A. pseudo-platanus purpureum.—This forms a stately tree; its foliage is large, handsome, and deep purple on the under side. A fine, ornamental tree, suitable for park planting.

Arundinaria falcata.—This nearly every where bloomed and died last year, mine doing the same: numbers of self-sown seedlings are, however, coming up where the plant stood; the seed therefore evidently ripened, though it appeared to me to be bad. Has this happened elsewhere?—A. RAWSON, *Bromley Common.*

HARDY ROCK PLANTS.

One of the chief aims of The Garden, from its commencement, has been that of rendering hardy plants popular, especially Alpine or rock plants, and had I only a few yards of ground at my disposal and wished to make the most of them, I should certainly convert them into a rockery, on which I could grow a choice collection of Alpine plants. There are many beautiful subjects that could be grown better on rockwork than on the level ground, as, for example, the Primulas, including the Alpine Auriculas, and Primula curtusoides; also Saxifrages (both the large-leaved and the mossy sections), and the many varieties of Sedums, Sempervivums, and hundreds of other plants quite as interesting. It is difficult to lay down definite rules for the construction of a rock garden, as so much depends on the space and position at command. This much I may say, however, that it is not necessary that it should be in a shady position, for many Alpine plants will bear a fair amount of sunshine; at the same time while most rock and Alpine plants enjoy a certain amount of moisture, anything like stagnation would be fatal to them. If, for instance, a heap of clay be thrown together that has been dug out of the foundation of a new building and covered with rough stones, although a little soil is put between them to give the plants a start, those on the top of the mound may flourish for a time, but those lower down would either perish or drag out a miserable existence. In this case the water would not be able to percolate the mass of clay, and being thrown off the top would so deluge the plants on the sides in winter that they would perish. Therefore, however a rock garden may be formed, the first consideration must be perfect drainage, and another equally important point is suitable soil. Sometimes in forming rockwork hollow spaces are left about the stones and crevices, and the roots of the plants getting into these become too dry and frequently die off. To have a rock garden properly made, the lower parts of it should be well drained as the work proceeds and the crevices filled up, in order that superfluous water can pass freely away without leaving any cavity under or near the plants. Anything like straight lines should be avoided; on the contrary, aim at an irregular surface. If the rock garden be on a limited scale, even then there might be a miniature dell and a gentle rise, with occasional recesses and projections as fancy may dictate. As to materials, I would confine them as far as possible to good stones. One of the best pieces of artificial rockwork which I have seen is at Belvoir Castle; there the rock builder has imitated, as far as possible, the natural cliffs which abound on every hand. The large stones employed are laid on their natural beds, and now that they have become weatherbeaten casual observers might easily mistake them for natural rocks. Here every plant looks as if it were at home, and despite the unfavourable weather with which they had to contend last spring, all bloomed most satisfactorily. Amongst them are broad patches of Arabis Aubrietia, and Linaria; healthy clumps of the spring Gentian and Doronicum austriacum; also Oxlips, Primroses, and Saxifrages in abundance, for all of which is afforded plenty of space for full development. It is a mistake to arrange the stonework in such a way that there is not room enough for the roots; a common error is attempting to crowd too many stones into the space at command, thus leaving few and small niches for the roots of the plants. Assuming, however, that the piece of rockwork consists of an irregular pile of stonework and earth, with interstices sufficiently roomy for Alpine plants, the next point is the most suitable kinds with which to clothe it. Instead of having those that bloom at the same time, I prefer a collection that would flower in succession from early in February right away into the dead of winter. If the rock garden be only limited, I would avoid all coarse-growing plants, and only use such as are close in habit, and which will at all times bear close inspection. A bed of Scarlet Pelargoniums or Yellow Calceolarias is seen at a glance, and is only admired for the striking effect produced by gaudy colours; but a piece of rockwork properly constructed and planted, be it only about 4 square yards in extent, will create much interest. Many fine plants occur in our Alpine and herbaceous collections, and if only a little care be taken as regards the choice of positions suitable for particular kinds, the cultivator will be amply rewarded by the way in which they will succeed. Some Sedums and Sempervivums will even flourish on bare walls, and should therefore have a sunny aspect in the rock garden, for they require but little moisture; but Primulas, Gentians, and some of the Saxifrages enjoy a little shade in summer and a good deal of moisture. As regards shrubs I would not introduce many, in fact, if the object be to make it an Alpine garden I would not introduce any, nor plants of very tall growth. The following is a selection of the very best Alpine and rock flowers, and they are such as will grow on any soil with or without the aid of rocks or stones :

- Acæna microphylla
- Acantholimon
  - glumaceum
- Achillea Clavennæ
  - tomentosa
  - umbellata
- Adonis vernalis
- Æthionema saxatile
- Ajuga genevensis
- Alyssum alpestre
  - saxatile
- Andromeda tetragona
- Anemone angulosa
  - apennina
  - blanda
  - coronaria
  - fulgens
  - Hepatica
  - palmata
  - pavonina
  - Pulsatilla
  - ranunculoides
  - stellata
- Antennaria dioica
  - tomentosa
- Anthyllis montana
- Antirrhinum rupestre
- Arabis albida
  - petræa
- Arenaria montana
  - purpurascens
- Armeria vulgaris rosea
- Astragalus
  - monspessulanus
- Aubrietia, in var.
- Bellis
  - hortensis aucubæfolia
  - double vars.
- Bulbocodium vernum
- Calandrinia umbellata
- Calceolaria Kellyana
- Callirhoe involucrata
  - pedata
- Campanula alpina
  - cæspitosa
  - carpatica
  - Cenisia
  - fragilis
  - garganica
  - muralis
  - pulla
  - Raineri
  - turbinata
- Cerastium, in var.
- Colchicum, in var.
- Convolvulus lineatus
  - Soldanella
- Cornus canadensis
- Coronilla iberica
  - minima
  - varia
- Crocus, many species and varieties
- Cyclamen europæum
  - hederæfolium
  - repandum
- Daphne Cneorum
- Dianthus deltoides
  - dentosus
  - neglectus
  - petræus
  - annulatus
- Dielytra eximia
- Diotis maritima
- Dryas Drummondi
  - octopetala
- Eranthis hyemalis
- Erica carnea
- Erodium Manescavi
- Erysimum ochroleucum
- Erythronium
  - Dens-canis
- Euonymus
  - radicans variegatus
- Fragaria indica
- Galanthus nivalis
  - plicatus
- Gaultheria procumbens
- Genista prostrata
  - sagittalis
- Gentiana acaulis
- Geranium argenteum
  - cinereum
  - lancastriense
- Geum montanum
- Gypsophila prostrata, and others
- Helianthemum in var.
- Helichrysum
  - arenarium
- Hutchinsia alpina
- Hyacinthus
  - amethystinus
- Iberis corifolia
  - correæfolia
  - Garrexiana
  - gibraltarica
  - sempervirens
  - Tenoreana
- Iris cristata
  - nudicaulis
  - pumila
  - reticulata
- Isypyrum thalictroides
- Leucojum vernum
- Linaria alpina
- Linum alpinum
  - arboreum
- Lithospermum
  - prostratum
- Muscari botryoides
  - Heldreichi
- Myosotis alpestris
  - dissitiflora
  - palustris
- Narcissus Bulbocodium
  - juncifolius
  - minor
- Nierembergia rivularis
- Œnothera marginata
  - missouriensis
  - taraxacifolia
- Omphalodes verna
- Orobus cyaneus
  - vernus
- Oxalis Bowiei
  - floribunda
- Pentstemon procerus
- Phlox divaricata
  - reptans
  - subulata
- Plumbago Larpentæ
- Polygala Chamæbuxus
- Polygonum
  - vaccinifolium
- Potentilla alpestris
  - pyrenaica
- Primula amœna
  - Auricula
  - integrifolia
  - marginata
  - officinalis in var.
  - Veitchii
  - viscosa
  - vulgaris, in var.
- Prunella grandiflora
- Pulmonaria officinalis
- Puschkinia scilloides
- Ranunculus alpestris
- Ranunculus
  - amplexicaulis
  - montanus
  - rutæfolius
- Sagina glabra, var.,
  - corsica
- Salix reticulata
  - serpyllifolia
- Sanguinaria
  - canadensis
- Santolina incana
- Saponaria ocymoides
- Saxifraga Aizoon
  - Andrewsii
  - cæspitosa
  - Cotyledon
  - granulata plena
  - hypnoides
  - juniperina
  - ligulata
  - longifolia
  - oppositifolia
  - pectinata
- Scilla bifolia
  - sibirica
- Scutellaria alpina
- Sedum album
  - Ewersii
  - glaucum
  - kamtschaticum
  - pulchellum
  - rupestre
  - Sieboldi
  - spectabile
  - spurium
- Sempervivum
  - arenarium
  - calcareum
  - glaucum
  - globiferum
  - hirtum
  - montanum
  - soboliferum
  - tectorum
- Senecio argenteus
- Silene acaulis
  - alpestris
  - Elisabethæ
  - maritima
  - Pumilio
  - Schaftæ
- Smilacina bifolia
- Sternbergia lutea
- Symphyandra pendula
- Thalictrum
  - anemonoides
  - minus
- Thlaspi latifolium
- Thymus lanuginosus
- Triteleia uniflora
- Tunica Saxifraga
- Vaccinium Vitis-idæa
- Veronica candida
  - fruticolosa
  - prostrata
  - saxatilis
  - taurica
- Vicia argentea
- Vinca minor
- Viola calcarata
  - cornuta
  - lutea
  - odorata
  - pedata
- Waldsteinia geoides
  - trifolia
- Zapania nodiflora
- Zauschneria californica
- Zietenia lavandulæfolia

R. K.

NOTES OF THE WEEK.

Hyde Park.—The mounds placed between the Serpentine and the "Row" have recently been completely removed. They would have obscured the view, and were a mistake from the commencement. The Row itself is being re-made with great care, although thoroughly overhauled last year. It is to be hoped it will prove satisfactory this time. The road has been raised in the centre, which will probably be detrimental to the line of trees there—already in a poor state. These would, however, probably be better removed altogether: if a line of trees be wanted in the centre, it would be better to begin anew with one species carefully chosen to suit the position.

Mangoes in Covent Garden.—These well-known Indian fruits are now exposed for sale in Covent Garden Market; they are about as large as a good-sized Lemon, and similar in shape but darker in colour. They may be sometimes met with in this country in hot-houses, where they are grown for ornament, their fruit being seldom eaten. In India and Brazil, however, ripe Mangoes are much esteemed, and the unripe fruits are used in tarts, pickles, and other conserves.

The New Embankment Gardens.—The new garden between Charing Cross Station and the Houses of Parliament is one of the prettiest in London, the flowers being bright, turf fresh, and plantations healthy and varied. The only drawback is the villanously ugly mud edgings to the beds. Assuredly the most unjustifiable puerility ever introduced to the flower garden were these low, cracked sections of mud walls to flower beds. We observe that these edgings have been done away with to a great extent in Hyde Park, and with great advantage.

A Brilliant Currant Bush.—The Golden-flowered Currant (Ribes aureum), apart from its beautiful yellow, sweet-scented flowers, and glossy, smooth, pale green, summer foliage hanging on straw-coloured twigs—is with me just now (September 18) the most brilliantly-tinted shrub I think I ever beheld. Instead of the colouring being partial or patchy, as is sometimes the case, the whole plant is ablaze, so to speak, with the brightest of fiery tints, which, when viewed from a distance, look almost like a bush on fire. On closer examination, it is found that the finely cut and highly polished leaves are richly suffused with a lovely colour, varying between bright purple and brilliant vermilion. This shrub, though by no means new, is but seldom met with, although so valuable in autumn on account of its effectively-coloured foliage.—G. B.

The Garden of the Hotel Dieu at Paris.—The "Lancet" Commission speak highly of the garden in the new hospital at Paris:—"The garden itself, with its bright green turf and gay flower-beds, sets off to the best advantage the simple but elegant buildings which surround it. The general effect is magnificent, and one could imagine oneself in the courtyard of a palace not unworthy of the Grand Monarque. Besides the central garden, there are four others in the courts, enclosed by the six main pavilions, so that the patients of every ward have the advantage of a most cheerful outlook.

Lapagerias at Chelsea.—The corridor in Messrs. Veitch's nursery is just now gay with white and rose-coloured flowers of L. alba and L. rosea. Instead of the shoots being formally trained to the trellis-work under the roof—a method too frequently practised—they are allowed to droop loosely, by which means, when thickly laden with bell-shaped, waxy flowers, as we find them here, a much better effect is produced. In sunless places in cool houses even in London these plants succeed perfectly, and can therefore scarcely be too highly valued. In Covent Garden Market blooms of these Lapagerias are fixed by means of wire to long shoots of Ficus repens in order to form festoons, wreaths, &c.; this obviates the necessity of mutilating the plants, and associated with the round, green and bronze leaves of the Ficus, the waxy, bell-shaped flowers of the Lapagerias are equally effective, and shoots of the Ficus can always be had in abundance.—C. S.

A Pleasant-tasting Emetic (Ungnadia speciosa).—The above-named, highly-ornamental, hardy flowering shrub or small tree is a native of Texas and is known in America under the name of Spanish Buckeye. Its foliage resembles that of the Hickory, and its blossoms those of the well-known Cercis Siliquastrum or Judas tree. The Chestnut-like fruits (which are produced in pods of three, somewhat resembling those of the Euonymus or Spindle tree in shape, but about five times the size) have an agreeable sweet taste when eaten, but according to Dr. George Vasey (the learned compiler of the catalogue of the forest trees of the United States, prepared for the Philadelphia Exhibition) are strongly emetic. This tree was first introduced into European gardens in the year 1848 by means of seeds sent to the University Botanic Gardens at Vienna by Dr. Lindheimer. It is still scarce and but little known or seldom seen in our gardens, where the beauty of its delicate, pale rose-coloured flowers, with their pendent and deep red-tipped anthers, as well as the above-named medicinal quality possessed by its fruit, should render it well worthy of more extended cultivation. It is well figured in a coloured plate in the tenth volume of Van Houtte's "Flore des Serres," tab. 1059.—W. E. G.

Acis autumnalis.—This charming little autumn-flowering bulb is now in bloom about London. It thrives best in fine sandy soils, and is an interesting subject for the choice rock garden.

Autumn-flowering Crocuses.—The following Crocuses are now in bloom in my grounds, viz., C. speciosus, dark and light blue; C. byzantinus, rich purple, a remarkably fine species, and one of the most distinct and beautiful of Crocuses, the inner petals being about one-third the size of the outer; C. pulchellus, silvery-lavender, stigma oranged, anthers white—a delicate little species.—P. Barr.

The Early Crawford Peach.—This Peach, which is of American origin, was the handsomest kind shown the other day at the Fruit Show at Alexandra Park. Several dishes of it were furnished by good growers, and in each case the fruits were of good size and of the richest orange colour tinged with crimson; it is a good cropper and excellent in flavour; it is reported to reproduce itself true from seed.—C. S.

Pitcher-plants at Chelsea.—The large house devoted to the culture of Nepenthes in Messrs. Veitch's nursery is now well worth a visit. Here are hundreds of plants growing vigorously, and forming numberless well-formed pitchers of all sizes. Large plants of N. Rafflesiana bear from twenty-five to thirty pitchers, each capable of holding at least a pint, and on the more rare N. Veitchi is an equal number of round, conspicuously-coloured pitchers. Suspended from the roof or placed on pedestals as they are here, such plants admit of Ferns and other shade-loving subjects being grown underneath them.

The Flame Nasturtium (Tropæolum speciosum).—This beautiful creeper, so much admired in the north of Scotland, where it thrives luxuriantly, but so seldom seen in good bloom in the south, is now sparkling with bright blossoms in Mr. Kinghorn's Nursery at Sheen, Richmond. A few roots received from the north and planted in a mixture of sand, loam, and peat, on the north side of a low wooden fence last March, have run up and overtopped the twiggy sticks, 9 ft. high, that support them. This plant, which is a profuse bloomer, is deserving of more general cultivation than it receives, its bright scarlet flowers being exceedingly handsome and showy; the only attention which it has had has been frequent waterings overhead.—J. F.

Table Decoration.—Messrs. Wyman & Sons are about to publish "Floral Designs for the Table: Being Plain Directions for its Ornamentation with Flowers and Fruit," consisting of twenty-four original coloured designs, easy of execution, and illustrating the most perfect mode of decorating the breakfast, luncheon, dinner, or supper table. We hope the "gorgeous" and the "splendid" will not be the only effects illustrated in this volume. Even the prize designs at our flower shows are over-elaborate and gaudy.

A Civic Custom.—On Tuesday at noon the master (Mr. Samuel Williams), the wardens (Mr. Henry Bollen and Mr. Alderman Knight), and the Court of the Fruiterers' Company—a civic guild founded in the third year of the reign of James I.—waited, by appointment, upon the Lord Mayor in the saloon of the Mansion House, and presented him with a splendid assortment of the choicest fruits of the season, including Grapes, Peaches, Apples, Pears, Melons, and Green Gages. Formerly the gift consisted of twelve bushels of Apples, which, neatly packed in baskets and covered with linen napkins, were brought from Farringdon Market by porters and escorted by the beadle of the company to the Mansion House. On its arrival in former days the Lady Mayoress used to direct her housekeeper to take charge of the fruit and put a bottle of wine in each basket for the use of the carriers, who were "regaled" with a dinner. At the ceremony on Tuesday the Lord Mayor was accompanied by Lord Elcho, M.P., Mr. Scott-Russell, the Rev. R. J. Simpson, Sir John Bennett, and other gentlemen who had been with him on public business. The master of the Company in appropriate terms offered the fruit for the Lord Mayor's acceptance, and his lordship suitably acknowledged the gift, and, following the custom, invited the company to dine with him at the Mansion House later in the year.

A New Worm Destroyer.—We have received from Messrs. Rutley & Silverlock, of the Strand, a cake of "Soap," which is made from the seed of the Tea plant, and which is said to be efficacious in destroying worms in lawns. It is said to be much used in China for this purpose. We propose having it tried. It somewhat resembles a cake of rough Mushroom spawn.

GARDEN FLOWER SCREENS.

Temporary hedges composed of quick-growing plants, principally annuals, are often found to be very useful for separating certain portions of the grounds from others, and concealing objectionable objects, &c. Among the subjects most useful for this purpose may be mentioned Tropæolum aduncum (Hooked Indian Cress, or Canary Creeper). The plant, however, is perhaps best known as the Canary-flower, so called on account of the fancied resemblance its blooms bear to that well-known bird. It is a native of Peru, but is sufficiently hardy to flourish in the open air of this country during the summer months. The various kinds of Sweet Peas are sometimes used as garden screens, but their period of flowering being somewhat contracted, they are not so suitable as the Canary-flower; the climbing varieties of the Convolvulus or Bindweed, although well suited to the purpose, have the drawback of their blooms being only expanded during a portion of the day, and remaining quite closed during unfavourable weather. The well-known and much-esteemed Scarlet Runner Bean (Phaseolus vulgaris), with its bright scarlet flowers, forms a most effective herbaceous hedge or screen, and is of course profitable as well as ornamental; and in addition to this, there is also a variety bearing pure white flowers, which, if intermingled with the scarlet-flowered kind, forms a very pleasing effect. I have quite recently seen a rustic arbour or summer-house in a cottage garden rendered exceedingly beautiful by being covered and festooned by these plants. During the summer months here an herbaceous screen is generally used with the view of concealing from a much frequented walk beds of Asparagus and similar rough-growing culinary vegetables. The screen is about 450 ft. long and is between 7 ft. and 8 ft. high; it is much admired when in full leaf, and is formed of the following annual climbers, viz., the Canary-flower, varieties of the Convolvulus major, and the various kinds of Sweet Peas. The seeds are mixed together in the proportion of two parts of the Canary-flower to one each of the Convolvulus and Sweet Peas, and are sown in a drill about 1½-in. deep, not earlier than the second week of April, as the seed of the Canary-flower will not germinate freely until the soil becomes somewhat warm, and during its early stages it is liable to be injured by frost; so that as soon as the plants are fairly above the ground, it is sometimes considered necessary to place a few Spruce Fir twigs among them as a protection, if the season be favourable. This protection is generally afforded by the Sweet Pea plants, which usually take the lead, and are closely followed by those of the Canary-flower, with a profusion of its neat and curious-looking yellow blooms, while ere long the splendid flowers of the striped and beautifully blue-flowering Convolvulus begin to unfold themselves, in company with the various coloured varieties of Sweet Peas, the admixture producing an exceedingly gay appearance. The supports for the plants are stakes similar to those used for the tallest varieties of the culinary Pea, about 7 ft. or 8 ft. long, and these are fixed as firmly as possible in the ground, and to them the plants cling with the greatest tenacity, and soon form a dense hedge, which acts as an effectual screen. The Canary-flower and Convolvulus will also cling to upright poles, and will grow to a height of 15 ft., or even higher, should this be desired; and where poles are used, they should be placed at a distance of 15 in. or 18 in. from each other. When Sweet Peas cease to flower no blank is apparent, as they are by that time completely covered and concealed by the other plants forming the screen, which usually continue in full beauty until destroyed by the autumnal frosts. Before this takes place it is advisable to gather the necessary quantity of the Canary-flower seed, as it is easily destroyed by frost.

Culford. P. Grieve.

Yellow-flowered Plants.—These are not, as a rule, in great favour, and few are met with in cultivation. This is doubtless partly due to the fact that the predominant colour of our wild flowers, especially in autumn, is yellow. Indeed, after passing the middle of this month, when the Heaths are over, there are few other than yellow-flowered wild plants in bloom; and some of them, such as the Ragwort, for example, continue in flower long after the leaves of most plants have lost the blue element of their green, and the yellow of approaching winter is only too conspicuous. It may also be partly due to the rarity of plants suitable for cultivation having yellow flowers of clear, soft, and agreeable tints. When the Calceolaria fails it is difficult to find a good substitute for it. Yellow Pansies, when of vigorous growth, are very effective, because the foliage is of a deep dark green: therefore in using yellow it should always be borne in mind that it is one of the constituents of green, and should be associated with a green, in which the other element, blue, prevails.—H.

Sheltered and Moist Situations Best for Fruit-bearing.—In a sheltered nook of the park here stands a very old Crab tree commonly called by the villagers Molly White's Marling Crab. I grows in quite a hole, which even in dry seasons is always moist, and is sheltered on the east, south, and west by a small belt of Beech and Elm trees at a distance of about 40 ft. each way. It is a well-proportioned tree, about 40 ft. high, and the circumference of the branches is about 110 ft. On Sept. 15 I gathered six bushels of good sized fruit off it, that is, exclusive of windfalls and stolen fruit. Last year it bore none. Its leading shoots have made rather over 2 ft. of growth this season. Another case showing the value of protection is as follows:—In the most sheltered part of the orchard I have three trees carrying heavy crops of Apples, while in more exposed parts some trees are producing only a small quantity, and I may add that two of the trees carrying fruit stand close to the edge of a pond. This, and the case of the Crab tree, seem to prove that fruit trees standing in moist situations and sheltered have the best chance of bearing a crop.—J. Simmons, *Calverton Hall, Notts.*

Orchids now in Flower.—Large numbers of plants of the comparatively rare Lælia Dayana may now be seen in flower in Messrs. Low's nursery at Clapton. They are growing in small wooden baskets placed thickly on stairlike stages. The blooms, which are of the richest carmine and purple, resemble in form those of L. pumila, but they are almost as large as those of L. purpurata. Associated with these are hundreds of plants of Oncidium varicosum in flower, small plants bearing several strong flower-spikes, on which are some very large, rich golden blossoms. At this season of the year, when good indoor flowering plants are scarce, these are doubly valuable. Dendrobium eburneum, too, is flowering freely, and the blooms are very fragrant. The beautiful Saccolabium Blumei majus may also be found here in good condition, the blossoms being well coloured, and produced on large, well-formed flower-spikes. The more common S. Blumei is also in bloom, but it is not nearly so good as the larger variety.—S.

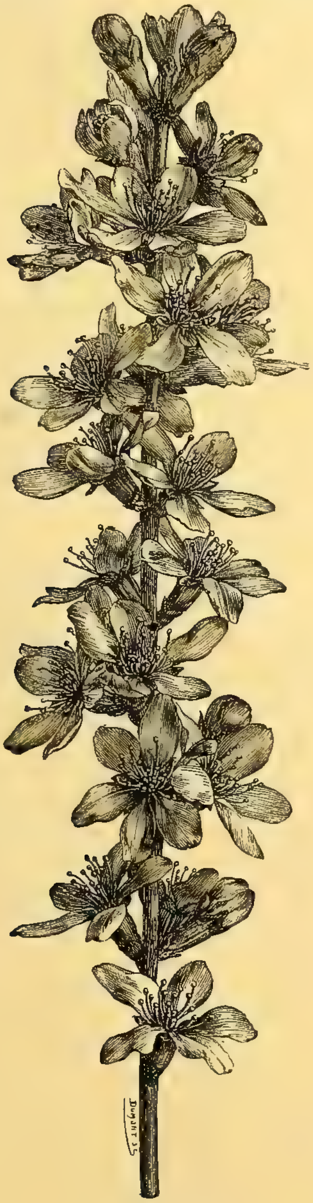
Cape Heaths at Clapton.—In the Clapton Nursery Heaths are grown by thousands, especially the winter-blooming kinds, such as E. hyemalis, gracilis, Wilmoreana, and others. They are placed during summer and autumn on beds of ashes in the open air, where the brightness of their foliage shows how well they appreciate the exposure. These plants are struck from cuttings in autumn and winter, the cuttings being obtained from young plants in 3-in. pots, which are being grown on for next year's flowering. Small points of the young shoots 1 in. long are taken off and placed under a bell-glass, having been previously sprinkled with water to keep them fresh until they can be made and inserted in the pots. The leaves are removed from the lower half of the cuttings by means of scissors or a sharp knife; they are then inserted thickly in 6-in. or 7-in. pots well drained and filled with sandy soil. A margin of about ½ in. is, however, left unoccupied by cuttings all round the pots, to admit of a bell-glass being placed over them. After being put in, the cuttings are watered, and placed on wooden stages in a long, lean-to house, each pot being covered with a bell-glass. Very little heat is given, but careful attention is paid to watering them. When the cuttings are struck, they are potted three in a 3-in. or 4-in. pot, and when again established, they are placed on shelves in houses or in pits, where a still cooler temperature is maintained. In spring they are potted off singly in 4-in. pots, each plant having a small stake affixed to it, to prevent it from becoming loosened at the root. During summer, the plants raised in this way are placed in cold pits, and in the autumn they are topped, to keep them dwarf and to supply more cuttings. In the following spring they are potted into 5-in. or 6-in. pots, and placed out-of-doors for the summer, during which time abundance of water is given them, and they are set far enough apart to allow sunshine and air to have free access to them to ripen the wood, which is the main point to be observed, in order to get them to flower freely. As one now finds them, each plant is furnished with five or six strong shoots thickly beset with bloom-buds from top to bottom. As cold and unfavourable weather approaches, if not otherwise disposed of, they are placed in frames or houses where they can receive plenty of air, and after the flowering season is over, such as are left are cut down and potted in 8-in. or 9-in. pots to make large plants the following season. Epacrises are grown in a similar manner, but not being quite so hardy, they are kept in temporary frames, where they can be sheltered if necessary.—C. S.

TREES AND SHRUBS.

THE DWARF ALMOND

(AMYGDALUS NANA).

This is a valuable little shrub on account of the early period at which it flowers (March and April), and the gracefulness of the slender twigs on which the blossoms are produced. It forms a low, creeping, deciduous bush, 2 ft. or 3 ft. high, with smallish, oblong-linear leaves tapering to the base, serrated on the edges, and quite glabrous. The flowers are rose-coloured, and, as will be seen, open thickly on the shoots before the leaves appear. The fruit is like that of the common Almond, but very much smaller. It is common all through the plains of Russia, and throws up an abundance of suckers. There is a white-flowered variety of it with much larger leaves than those of the kind just noticed. This may be found in cultivation under the names of A. campestris and A. Besseriana.



Amygdalus nana.

George Gordon.

Propagating Evergreen Trees and Shrubs.—Cuttings of all kinds of evergreens, planted now in fine sandy soil, will form a callus during the autumn and winter and emit roots early in spring, and in a couple of years will develop into small plants that would be useful for many decorative purposes, independently of the desirability of improving the character of the shrubberies. The choicer kinds of Coniferæ, Aucubas, &c., will do better if they can be put in pots and plunged in Cocoa-nut fibre or sawdust under glass, where they can be kept close, in a cold frame on the north side of a fence. If taken off with a heel, that is, with a piece of the last year's wood at the base, they, like the majority of plants propagated by cuttings, will root with greater certainty.—H.

The Golden-leaved Elder.—On page 247 "S." correctly notes the Golden Elder as one of the best of coloured plants for enlivening shrubberies; but I must add that it is frequently condemned for its inconstancy in colour, particularly when it attains a considerable size. It is in this respect, like many more self and parti-coloured plants, that it shows itself to the best advantage when in a young and vigorous state. It is, however, easily propagated, and when rooted grows so luxuriantly that, considering the purpose for which it is required, it need never be allowed to arrive at any great age or size. I find, moreover, that large plants of it can be kept up to the colour standard by winter-pruning the shoots to within a few inches of where they started from the preceding spring. I know a large plant that used to be grand in colour, but last winter it was left unpruned, and now, in consequence of such neglect, it is almost green.—Geo. Syme.

Poisoning by Laburnum Seeds.—Four years ago I was called to the Richmond Street School to see twenty children, who after dinner were attacked with sickness. Skin cold and clammy; pulse quick and very feeble; eye-pupils very much dilated. With great difficulty some were roused out of their sleepy condition. Immense anxiety prevailed, as the children had not left the dinner-table more than twenty minutes. I was quite at a loss for the moment, and should not have thought of Laburnum seed but for the fact that on the very morning of the affair I was engaged in investigating the cause of death of some fowls, and was quite satisfied it resulted from swallowing the Laburnum seed. For many years we could not account for the loss. I further noticed some would eat them, whilst others would not; and secondly, I noticed that those that ate Mulberries were not affected. I gave the children bread and water, with mustard emetic. I could not find a trace of the seed in the vomit of those that suffered most, and were supposed to have eaten the least. I feel sure we ought to give great attention to such a dangerous tree, which is becoming a favourite in the garden. Brandy and beef-tea, with ammonia, were administered, which, with mustard baths, did good service. All recovered within twenty-four hours.—John Vance, *Plaistow*, in "Lancet."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Berberis Wallichi.—It seems that the Berberis we have all along been calling B. Jamesoni is really the B. Wallichi, B. Jamesoni being quite distinct and very scarce.—W. E. G.

Pinus Cembra.—The cone of P. Cembra, as represented on p. 263 of The Garden, is unnaturally small, and therefore calculated to mislead. Healthy, well-grown specimens are from 2½ in. to 3 in. long, and proportionately wide. —S.

A Scented Eucalyptus.—Mr. Bull has introduced a species of Gum tree (Eucalyptus citriodorus) the leaves of which have a delicious balm-like odour. If it prove a vigorous grower, the tree may become famous for planting in malarious places, for such a balmy odour escaping from a large surface could scarcely fail to have a good effect on the air.

Aquatic Trees.—The top of Grand View Mountain, near Middlebury, Vermont, has a remarkable pond, about three quarters of an acre in extent. Except a small space in the centre, it is covered with a thick Moss, strong enough for people to walk upon. Poles are pushed through the Moss at any point, but none have ever touched the bottom, yet there are large trees growing on it, and people walk in safety, the Moss forming a thick mat or carpet described as exquisitely beautiful.—[We find the above quoted in various papers. The condition is common enough in Canada, and probably elsewhere.]

Trees in Cornwall.—The comparative absence of trees in Cornwall affords a remarkable contrast in this respect to Devonshire. On the high grounds they are few and poor, and even in the hollows they do not attain any great size. Running about for some days, we did not happen to see a single tree worth taking notice of, and half-a-dozen miles from the Land's End they utterly fail. On the whole, Cornwall may be described as a treeless land. The hedges, however—many of them at least—are, like those of Devonshire, magnificent. One in particular above the Linyher was a perfect marvel of vegetation. In the course of a mile or two we noticed growing on it in wild luxuriance nearly all the ordinary trees of the country—Oak, Beech, Elm, Thorn, Hazel, Birch, Ash, Bramble, Ivy, with Foxgloves and dozens of other wild flowers past naming.—"Scotsman."

THE APPLE IN KENT.

(*Continued from p.* 255).

This fruit is grown chiefly in Mid Kent and the Weald of Kent. It is also grown in East and West Kent, though not to any great extent. In the first-named district the acreage of Apple orchards has recently decreased, especially of those under Grass in the neighbourhood of Maidstone. The trees had become, in many cases, cankered from rough pruning, or overburdened with useless wood from the absence of judicious thinning. No pains had been taken to replace trees that had died. The Grass had been systematically mown and kept unmanured, or had been fed off by lean stock. It is only recently that the occupiers of Grass orchards have discovered that fruit trees require a large and regular supply of manure, and that Grass land has more than enough to do, unassisted, to repair the waste caused by constant mowing, or feeding off with animals getting their whole subsistence from it. Many Apple orchards of this description, which old men can remember as having been abundantly productive of Nonpareils, Ribston Pippins, Margils, Golden Russets, and other Apples of choice quality, rare size, and excellent flavour, have been grubbed up to make room for Hops. As the best land was invariably selected for Apple orchards, in times when Hops were not so highly esteemed, it is found that Hops always thrive remarkably well in the "old orchard" grounds. Most of the Apples now produced on the Greensand are grown on land that is dug and hoed continuously, either upon full-sized standard or half-standard trees. The former, from too much or too little pruning, and neglect of long standing, are in an unsatisfactory state, not yielding a tithe of what might be expected. The half-standards, though not frequently met with, are comparatively young trees, having been trained in the way they should go in more enlightened times, and their fruit is of better size and quality. As has been shown, the land is thickly covered with trees of various kinds, so that in midsummer it is often as difficult to force a way through some fruit plantations as through an ordinary copse, and it is a question whether the under trees, whose roots are nearer the surface, do not absorb the bulb of the manure and thus starve the Apple trees. In the Weald of Kent Apples are grown principally on Grass land, the fruit grown in this way being of a somewhat better colour and quality than that which has been produced on cultivated land; and practical men hold that, independently of this, all Apples grown on the Weald clay and Hastings sand are superior in colour and size and make better cider than the fruit grown in other parts of Kent, though there is not much difference as regards quantity. It is certain that Apples grown on Grass are not so liable to specks and blemishes. In the formation of an Apple orchard intended for Grass, it is found in practice to be best to plant the trees on well trenched land, and to lay it down after a few years, when the trees are well established. I have planted Apple trees of the excellent variety known as Lord Suffield on Grass land and on cultivated land at the same time, both being manured in the same way; those on the cultivated land grew away from those on Grass in a remarkable degree, and bore fruit the second year, while the others did not bear for three or four years. Apples are raised entirely from grafts. The tendency to reversion in this plant, in common with others of a fruit-bearing character, renders it impossible to depend upon plants raised from seed, or upon obtaining like from like. If the pips of the best sorts of Apples be planted, they reproduce heterogeneous varieties. When chance has developed a prodigy, it is well known to fruit growers that this can only be surely perpetuated by scions or grafts. Mr. Knight, in his "Pomona Herefordiensis," described a method of raising new sorts, by crossing varieties by artificial impregnation. Mr Knight certainly produced new sorts, but it is questioned whether they were not the results of chance or of fecundation by insects. Upon this point the leading pomologist of the day lately made the following communication to me:—"I have endeavoured to raise seedling Apples by artificial impregnation: having kept them in pots under glass, I have been able to preserve them from any other fecundations, but the plants have not yet borne fruit." There has been a fallacy prevalent, that trees raised from grafts do not survive the parent stock—that when an Apple tree dies all those trees that have been propagated from scions taken from it die in mournful accord. Mr. Knight, who was President of the Horticultural Society in the latter part of the last century, firmly believed in this curiously unnatural provision, and attributed the decay of the best sorts to its action. "The Golden Pippin," he wrote, "is in the last stage of decay, and the Styre and the Fox-whelp are hastening rapidly after them. I think I am justified in the conclusion that all Apple plants propagated from the same stock partake in some degree of the same life, and will attend it in the habits of their growth, their maturity and decay, though they will not be affected by any incidental injuries the parent trees may sustain after they are detached from it." The *naïveté* of this illogical statement is amusing. If an Apple tree die peacefully in its bed, having come to a green old age, its offshoots forthwith one and all decay. If, however, a tree be blown or cut down, the offshoots are not expected to commit suicide. Many generations of original trees have died and their descendants flourish yet. The Golden Pippin still exists in Kent, and the Styre and Fox-whelp are still plentiful in Herefordshire, in spite of Mr. Knight's funeral sermon in 1797. Notwithstanding this *reductio ad absurdum*, there can be no doubt that Apple trees produced from cross-fertilized seed would be more vigorous and fruitful than those reared in the usual way from a long series of stocks propagated by scions. This process is certainly unnatural, though it is convenient, in consequence of the tendency to atavism inherent in most plants that have been improved by selection. Artificial fecundation is a delicate operation, requiring careful manipulation and nicety of management, which prevent its general adoption. It is true it is practised in a rough way by the peasant girls of St. Valery, who go forth armed with Apple-blossoms to *faire ses Pommes*, to fecundate a peculiar sort of Apple tree whose flowers are devoid of stamens; but this is done to secure fruitfulness without reference to propagation. Mr. Darwin shows most clearly in his recent interesting work that cross-fertilization of plants improves them in most important points, and that continuous self-fertilization through many generations tends to gradual degeneracy. The conclusions arrived at by Mr. Darwin, after a most elaborate exposition of experiments upon various plants, are "that cross-fertilization is generally beneficial and self-fertilization injurious. This is shown by the difference in weight, height, constitutional vigour, and fertility of the offspring from crossed and self-fertilized flowers, and in the number of seeds produced by the parent plants. . . . . After plants have been propagated by self-fertilization for several generations, a single cross with a fresh stock restores their pristine vigour, and we have a strictly analogous result with our domestic animals." Very curious notions have also been extant from very early days as to grafting. Pliny gives a graphic account of a grafted tree which was covered with all kinds of fruits—Nuts, Berries, Grapes, Pears, Figs, Pomegranates; but the tree did not live long is his conclusion. Lord Bacon also gravely speaks in his "Silva Silvarium," of Apple scions grafted upon a Colewort, which produced great flabby Apples. Kentish growers now generally discredit the absurdities as to grafted trees, and attribute the decay of some old sorts as the Ribston Pippin and the Nonpareil, in particular places, to the exhaustion of essential elements in the soil, to bad treatment, to constitutional delicacy, and liability to blight and canker. To these causes may be added the change in the temperature, to which allusion has been made. The Crab is the proper stock upon which to graft Apples, but as the supply of these stocks is limited, the best stocks are selected from those that have been raised from pips for that purpose in a nursery, and are grafted with scions of the kind required. The stocks are chosen from those sorts which have clear, hard stems, and are moved into the orchard when they are from four to five years old. The process of grafting requires much care and nicety, but as this has been so elaborately treated in a former number of this journal, it is not necessary to describe it again. Most growers cut the young tree hard the first year it is planted out, as this is supposed to favour root development. A practical and most successful grower, however, objects to this practice, considering "that the tree has enough to do to establish its roots without being weakened by cutting." For the first few years the young Apple tree should be pruned so as to keep the middle well cleared out and the leading shoots as level as possible. When the tree is well established slight pruning will be necessary once in two or three years. Not nearly enough attention is paid to pruning the trees after they have become fair-sized. Now and then a raid is made upon those that are most bushy, which are hacked and cut about unmercifully, and it is not strange that Apple trees of the best sorts, invariably the most delicate, decay prematurely. Very few growers prune their Apple trees scientifically or manage them thoroughly in other respects. Here and there a plantation may be found where the trees have received systematic and proper treatment from the date of planting, where good fruit is produced in abundance; and it is asserted confidently that the land in Kent really suitable for Apple growing may be made to yield fruit not much inferior in quality to the traditional Nonpareils, Scarlet Nonpareils, Golden and Ribston Pippins, and other sorts, whose sweet memories linger yet in the recollection of Apple-loving octogenarians. To ensure this, however, there must in most cases be a fresh start; the land must be unexhausted, the management more skilful, and the treatment altogether more liberal. The pruning and clearing out of large Apple trees which have never been properly pruned, must not be done *per saltum*—at one fell swoop—but should rather be extended over several years. If large trees that are embarrassed with branches and filled up with spindly shoots, be cleared out at once, canker will certainly be produced in those of a delicate nature, and the most hardy sorts will be seriously weakened. It is better to prune Apple trees in the autumn, as soon as the fruit has been gathered, because it is more likely that fruit buds will be developed from pruning at that season than after winter cutting, which usually tends to create comparatively unproductive wood. The pruner of trees crowded with wood must aim at gradually cutting the oldest superfluous branches, so that each branch left may stand out by itself and get a full share of air, light, and sun. If the fruit grower employ only ordinary labourers to prune his trees, he should examine each tree himself, and mark with chalk those branches which he thinks should be cut away. In the case of young trees that have been properly trained, and of older trees that have been reduced to a proper state by gradual pruning as above described, the amount of pruning required is very trifling. The fruit in most sorts comes upon spurs or short twigs on wood that is at least two years old, generally from buds that are covered till late in the autumn with clusters of dead leaves. The chief objects are to ensure a proper supply of these fruit-bearing spurs, and to keep them from being crowded and starved out by unfruitful shoots or suckers that grow out on all sides in many sorts. There are a few varieties, however, in which the fruit is grown upon slight shoots. These require thinning out and shortening if possible to prevent the fruit from injury from wind.

Cultivation.—Cultivated fruit plantations are seldom manured with farm-yard or stable manure, as from its bulk it is difficult and expensive to put on land thickly covered with fruit trees. Shoddy is very largely used, at the rate of from 1 to 2 tons per acre, costing from 48s. to 100s. per ton, according to its percentage of ammonia. This is easily got in, and suits fruit trees well. Rags, both mixed and woollens, form a capital easily-applied manure; the quantity put on and the cost are about the same as in the case of shoddy. Fish manure, Rape dust, and the refuse from furriers' and tanners' shops are all good manures. I have tried superphosphate of lime without much apparent benefit. From kainite of potash put on fruit land at the rate of 7 cwts. per acre, it was thought that good results followed, though the effect of this manure could never be traced when applied for other crops; for Apples, like Hops, absorb an enormous quantity of potash from the soil. All manures are put on in the winter, and the land is dug afterwards with the Kentish spud which is used in Hop gardens, having four flattened tines, as early in the winter as possible, before any bloom-buds are developed, so that the diggers may not injure them and rub them off. The plantations, or "plats" as they are locally termed, are hoed over with plate hoes two or three times during the summer to check the weeds, which grow luxuriantly in the shade of melancholy boughs. Many large fruit growers in East and Mid Kent sell the fruit on the trees by auction or private contract to middlemen, who, making fruit-buying a regular business, thoroughly understand the picking and packing of fruit, and the best time and place to sell the various kinds. Sometimes they are salesmen, or connected with salesmen in the London markets, who are well versed in the mysteries of the trade. This saves the growers much trouble, as they are generally busy with the all-engrossing Hop harvest when the Apples, Pears, Plums, and Nuts require attention. This is not so much done near London, where Hops are not grown to any extent.

Diseases.—Besides canker, mainly caused by injudicious pruning, to which Ribston Pippin, Golden Pippin, King Pippin, and other delicate sorts are specially liable, a plague of caterpillars appears occasionally just as the trees are beginning to bloom. Twice within the last twelve years they have stripped the trees in certain situations of every vestige of blossoms and leaves. The caterpillars invariably follow a long spell of cold east wind, appearing on the trees unsheltered from its influence, showing that their juices have been changed by it, and rendered grateful to the tastes of the invading hosts. Washing the bodies of the trees with quicklime-wash in the winter is adopted to destroy the eggs that are deposited in the summer under the bark, as these eggs contain the destructive larvæ or caterpillars. Old trees and young trees on some soils are overspread with varieties of grey Lichens, which cover the trunks, the large branches, and even the small boughs and twigs. These Lichens are epiphytic, deriving their sustenance from the carbonic acid and moisture of the air, and not in any degree from the tree. Two specimens of these Lichens sent to Mr. Carruthers have been identified by him as Ramalina fastigiata and Evernia furfuracea respectively. Mr. Carruthers is of opinion that lichenous growth is not in any way injurious to the tree, as he believes that it is not found upon the younger branches, whose stomata still absorb carbonic acid. It may, however, be very frequently found even upon the smallest branches and twigs of Apple trees growing on the Kentish rag, and must tend to check, if not entirely to cut off, the supplies they would otherwise take in from the air. Apple growers believe that it is most injurious, and that a tree cannot be perfectly healthy when covered with it. They send men to throw up quantities of quicklime with scoops, like flour scoops, fastened to long poles, into the trees in damp weather. This adheres to the Lichens, quickly burning them up, and the tree is made clear and free. Salt water was recommended to check lichenous growth, in a paper read at the Maidstone Farmers' Club, as it had been noticed that trees near the sea-coast are perfectly free from them.

Varieties.—The chief sorts grown in Kent are, commencing with dessert Apples, the Ribston Pippin—*facile princeps* among Apples—now unfortunately a somewhat shy bearer. The King Pippin is much grown in Mid Kent and the Weald; this is a handsome Apple when well grown, but it is inclined to be specky on the rag-stone, though doing better on the Weald Clay. Joanettings and Summer Pippins (early kinds), are also grown and bring good prices. Red Quarrendens, Farleigh Pippins, Pearmains, Nonpareils, Golden Knobs, which ordinarily keep well until Apples come round again, bringing high prices in Covent Garden market, are found in most Kentish plantations and orchards. The Margil, whose flavour is nearly equal to that of the Ribston, and, as Dr. Hogg remarks, is of a better size for dessert, is too shy a bearer, and is not therefore extensively grown. The Blenheim Orange, a large handsome Apple, is much grown near Maidstone and in the Weald. Cox's Orange Pippin has been planted extensively of late. This is a high-class Apple for dessert from November to January, supposed to have been raised from a pip of a Ribston Pippin. The principal cooking Apples grown in Kent are Keswick Codlins, Gooseberry Pippins, Hawthorndens, Northern Greenings, Wellingtons, Winter Greenings (all valuable sorts), the Golden Noble, and Lord Suffield (a very fine-flavoured, early-bearing sort). Tower of Glamis and the Manx Codlin are chiefly planted now. In most old Apple orchards there are several other sorts of little value, such as the Gough—an acid and very low-class Apple, but an abundant bearer. Cider is but little made in Kent now;

its quality is comparatively poor, and the natives wisely prefer beer. The custom of giving drink to labourers is happily not much observed in the county, and there being but little demand for cider, growers send windfalls and low-class Apples in barrels to London, where they find a sale at some price for the "smashers," as low-class jam makers are styled in costermonger parlance; though, as a correspondent remarks, "since the Adulteration Act there has not been such a demand for rubbish." As many as 500 bushels per acre have been grown in plantations where the trees were in their prime. Taking an average of seven years of the average Apple-growing land in the county, the crop per acre per annum would be about 130 bushels. The average price per bushel for Apples home to the grower, for the last ten years, has been about 2s. 2½d.; the expenses for picking, packing, carriage, commission, and return of sieves, amounting to about 1s. 4d., having been deducted. For the preceding ten years, the average price, clear of all these expenses, was about 1s. 10d. per bushel. The annual yield per acre of the orchards under Grass must be regarded as being 20 per cent. larger than that of the plantations in respect of Apples, but the average annual yield of both taken together amounts to about the quantity of bushels stated above. The fruit growers in Kent do not appear to have tried growing, upon a large scale, Apples and Pears on low bush trees, obtained by working upon true Paradise stock, whose influence tends to dwarf the habit of growth, and to produce fruit abundantly. These bushes can be easily pruned and root-pruned if thought desirable. There are several plantations of these near London, one notably at Chiswick, belonging to Mr. Dancer, who grows quantities of the finest fruit upon this system, which it is thought might be adopted successfully by the large fruit growers in Kent.

(To be continued).

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Cobbett's Fall Apple.—The finest tree of Apples I have seen this year was of this kind. It is a large and excellent cooking Apple, and although by no means a new variety, it appears but little known in proportion to its merits. —JAMES GROOM, *Henham.*

American Blackberries.—It has been asked (see p. 163) if any of the American Blackberries are worthy of cultivation in this country. I have grown one variety—the Lawton, a finely flavoured kind—but our climate does not seem to suit it, as it only bears and ripens well in exceptionally warm summers. I can highly recommend the Parsley-leaved Blackberry (Rubus laciniatus) as one of the best varieties grown. It is a great bearer, and makes one of the best of preserves when combined with a few Apples.—W. TILLERY, *Welbeck.*

Simple Grape Growing.—That excellent Grapes may be grown without elaborate border preparation many examples prove. A very good one came under our ("Journal of Horticulture") notice the other day near Penge railway station. Mr. Baily simply made a narrow ridge on the surface of the garden (not excavating) of the loamy clay, mixed freely with stable manure, and in this planted his Vines, adding to the ridge as they increased in size. The Vines have for some years produced wonderfully heavy crops and no shanked berries. To borders above ground and rich surface dressings Mr. Baily attributes his success.

The American Cranberry as a Pot Plant.—Having on several occasions attempted to grow Cranberries with singular non-success, I am fully sensible of the importance of having at last, in a way, gratified my ambition. My early endeavours were founded on the idea of an artificial bog; I laid down beds of peat, provided water to swamp the ground, and planted Cranberries, but seldom saw the fruit. The plants were obtained from various parts, and all I could imagine as to their wants I carried out, but to little purpose. Four years ago I received from a friend about 1 pint of selected American Cranberries (Oxycoccus macrocarpa). They were nearly as large as Cherries, and of the most beautiful amber and crimson-scarlet tints. I planted these, and soon became possessed thereby of numbers of fine plants. A considerable portion of these were planted out, and, like their predecessors, came to little good. But a few that I reserved for pot culture have fruited freely, and are extremely handsome plants. These have been grown in spongy peat in large pans, which are kept in about 1 in. in depth of water. I believe my failures in Cranberry culture to have resulted from keeping the plants too wet, for although they are natives of bogs we do not find them in watercourses; my pot plants did not thrive when I kept them deeply immersed, as I did at first, cherishing the idea that they must be aquatic in constitution. When I adopted a maximum of 1 in. of water for the pots to stand in, the plants made rapid progress. I can assure those who find time and have the good taste to grow something besides bedding plants, that the American Cranberry is, for its beauty alone, well worthy of their attention.—"Gardeners' Magazine."

PEAR MONSEIGNEUR DES HONS.

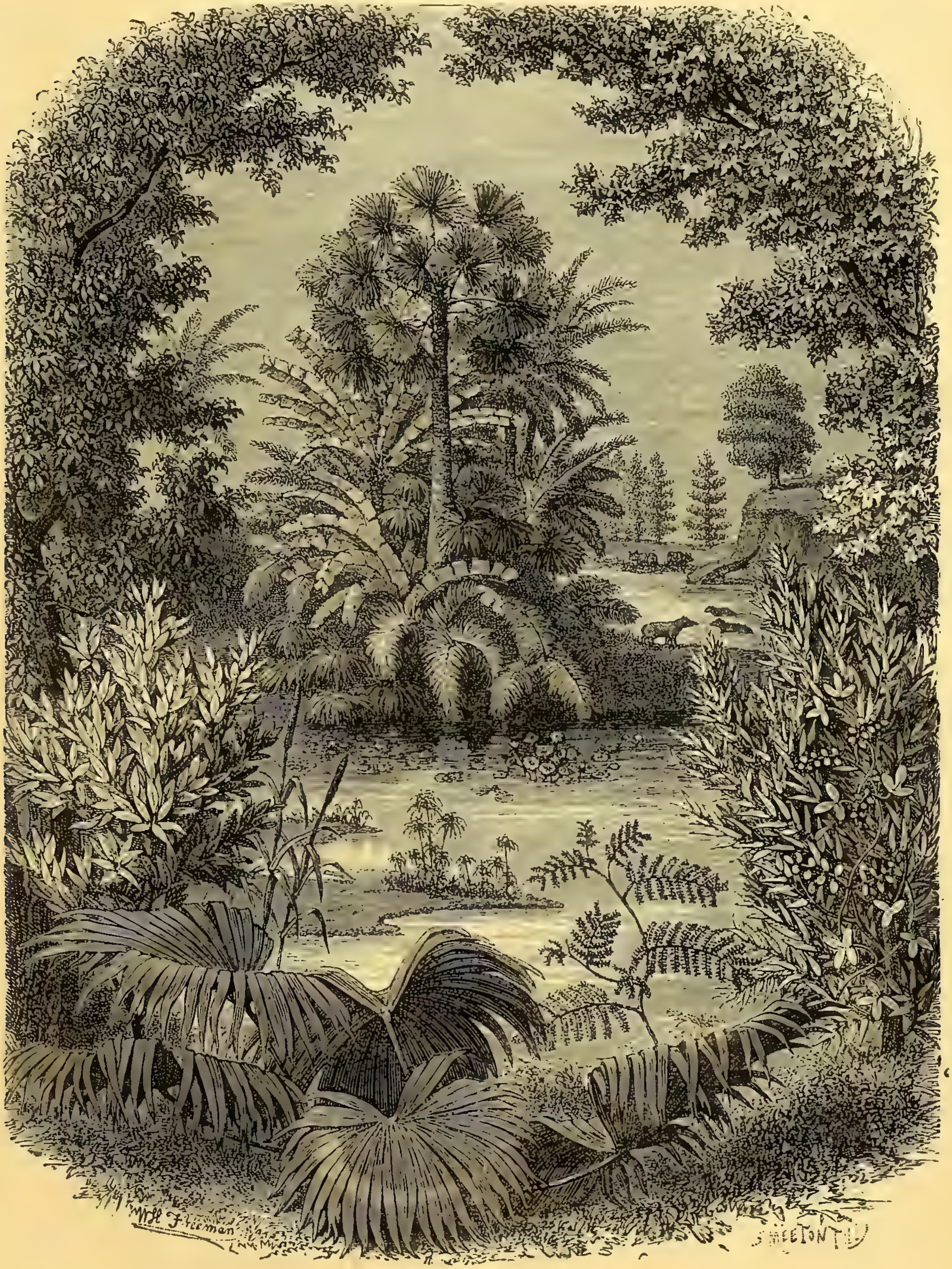
THIS variety was obtained from a pip of Rousselet de Rheims, by M. Gibey Lorne, of Troyes. It grows and bears well on the Quince, but where standards are wanted they should be worked on Pear stocks. The fruit is of medium size, round, of a yellow colour suffused with brick red and spotted with grey; the flesh is melting and perfumed, and the fruit is usually ripe about the middle of August.

In Wurtemberg this Pear grows strongly as an orchard tree, and there the fruit is used for drying, cooking, and for dessert.

M. BALTET.

Adventitious or Air Roots on the Vine.—These are so called from being produced on the stem, and being suspended in the air like so many threads. They are of the same character as the true roots, and only require to be brought into contact with the soil to become such. These air-roots are sometimes produced in great profusion from every part of the stem, frequently attaining 1 ft. or more in length, and so give the Vine a strange appearance. There is no particular harm in them *per se*, but their presence betokens a want of proper action on the part of the true roots running naturally in the soil. They are a sign of bad health, and are frequently the precursors of shanking; they give evidence that the proper roots are not in a condition to supply the great demands of a large expanse of foliage, &c., and that, aided by a warm, moist atmosphere within the house, Nature is trying to supply this want. Close warmth and moisture will induce the formation of such roots from Vine stems at any time; but if the true roots in a border be in a perfectly congenial condition, no air or adventitious roots will be produced in any ordinary well-managed Vinery; they are, in short, the result mainly of the roots being in a cold, wet border. To prevent their formation, or to recover Vines subject to this evil, the amelioration of the borders must be seen to. Some varieties of Vines, such as those of the Frontignan class, being of a more tender constitution, are more subject to the formation of air-roots than others. When they are produced they need not be cut off, except for appearance sake, for they will wither up and die as the wood ripens.—"Florist."

Vegetation of the Miocene Period.—The accompanying engraving represents a landscape as it may be supposed to have existed at the period of the Miocene or middle Tertiary formation. Judging from the evidence afforded by fossil plants, this was the great epoch for the development of monocotyledonous plants, as many as a hundred and eight-five species of these having been found in the Miocene formation. Among Cryptogams, Lichens have as yet only been observed in Baltic amber and on lignites of the Miocene age; in the same amber are preserved nearly all the fossil Mosses and Liverworts that are known. Coniferous forests entered largely into the flora of this period; and the amber to which reference has already been made, was originally a resinous exudation from some of these Coniferous trees, which were probably near allies of the Thujas and Cypresses of recent Canadian and Asiatic forests. Besides the Conifers, large forests of Oak, Ash, Birch, Beech, and Willow existed in Northern and Central Europe towards the close of the Tertiary period. The remains of species of Salisburia and Liriodendron (Tulip-tree) are found in Italy, the recent analogues of stems occurring in Japan and North America, and Liriodendrons being also represented in China by an at present undescribed species which seems to be a native of the Kiu-Kiang hills. The flora beneath the trees consisted largely of Primulaceæ, Crassulaceæ, Scrophulariaceæ, Ericaceæ, &c.: while Honeysuckles climbed up the trees or formed bushes, and Loranthaceæ of different species were parasitic on the trunks and branches. The researches of Prof. Heer have done very much to elucidate the European flora of the Miocene period, and should be consulted by any one anxious to obtain a thorough knowledge of the subject.



VEGETATION OF THE MIOCENE AGE.

THE GARDEN-CRAFT OF SHAKESPEARE.

Any account of the "Plant-lore of Shakespeare" would be very incomplete, if it did not include his "Garden-craft." There are a great many passages scattered throughout his works, some of them among the most beautiful that he ever wrote, in which no particular tree, herb, or flower is mentioned by name, but which show his intimate knowledge of plants and gardening, and his great affection for them. It is from these passages, even more than from the passages I have already quoted in which particular flowers are named, that we learn how thoroughly his early country life had permanently marked his character, and how his whole spirit was most naturally coloured by it. Numberless allusions to flowers and their culture prove that his boyhood and early manhood were spent in the country, and that as he passed through the parks, fields, and lanes of his native country, or spent pleasant days in the gardens and orchards of the manor-houses and farm-houses of the neighbourhood, his eyes and ears were open to all the sights and sounds of a healthy country life, and he was, perhaps unconsciously, laying up in his memory a goodly store of pleasant pictures and homely country talk, to be introduced in his own wonderful way in tragedies and comedies, which, while often professedly treating of very different times and countries, have really given us some of the most faithful pictures of the country life of the Englishman of Queen Elizabeth's time, drawn with all the freshness and simplicity that can only come from a real love of the subject. "Flowers I noted," is his own account of himself (Sonnet 99), and with what love he noted them, and with what careful fidelity he wrote of them, is shown in every play he published, and almost in every act and every scene. And what I said of his notices of particular flowers is still more true of his general descriptions—that they are never laboured, or introduced as for a purpose, but that each passage is the simple utterance of his ingrained love of the country, the natural outcome of a keen, observant eye, joined to a great power of faithful description, and an unlimited command of the fittest language. It is this vividness and freshness that give such a reality to all Shakespeare's notices of country life, and which make them such pleasant reading to all lovers of plants and gardening. These notices of the "Garden-craft of Shakespeare," I now proceed to quote; but my quotations in this part will be made under a different plan to that which I adopted in the account of his "Plant-lore." I shall not here think it necessary to quote all the passages in which he mentions different objects of country life, but I shall content myself with such passages as throw light on his knowledge of horticulture, and which, to some extent, illustrate the horticulture of his day, and these passages I must arrange under a few general heads. In this way the second part of my subject will be very much shorter than my first, but I have good reasons for hoping that those who have been interested in the long account of "The Plant-lore of Shakespeare," will be equally interested in the shorter account of his "Garden-craft," and will acknowledge that the one would be incomplete without the other. I commence with those passages which treat generally of—

I.—Flowers, Blossoms, and Buds.

(1) *Quickly.* Fairies use flowers for their charactery.
Merry Wives of Windsor, act v., sc. 5.

(2) *Oberon.* She his hairy temples then had rounded
With coronet of fresh and fragrant flowers;
And that same dew, which sometimes in the buds
Was wont to swell, like round and orient pearls,
Stood now within the pretty flow'rets' eyes,
Like tears that did their own disgrace bewail.
Midsummer Night's Dream, act iv, sc. 1.

(3) *Gaunt.* Suppose the singing birds, musicians;
The Grass whereon thou tread'st, the presence strewed;
The flowers, fair ladies.
Richard II., act i., sc. 3.

(4) *Katharine.* When I am dead, good wench,
Let me be used with honour; strew me over
With maiden flowers, that all the world may know
I was a chaste wife to my grave.
Henry VIII., act iv., sc. 2.

(5) *Ophelia (sings).*
White his shroud as the mountain snow
Larded all with sweet flowers,
Which bewept to the grave did go
With true-love showers.
Hamlet, act iv., sc. 5.

(6) *Queen.* While's yet the dew's on ground, gather those flowers.
Cymbeline, act i., sc. 6.

(7) *Song.* Hark! hark! the lark at Heaven's gate sings,
And Phœbus 'gins to rise
His steeds to water on those springs
On chaliced flowers that lies.
Ibid., act ii., sc. 4.

(8) *Arviragus.* With fairest flowers,
While summer lasts, and I live here, Fidele,
I'll sweeten thy sad grave.
Ibid., act. iv., sc. 2.

(9) *Belarius.*
Here's a few flowers; but about midnight, more;
The herbs that have on them cold dew o' the night
Are strewings fitted for graves. Upon their faces.
You were as flowers, now withered: even so
These herblets shall, which we upon you strew.
Ibid.

(10) *Juliet.* This bud of love, by summer's ripening breath,
May prove a beauteous flower when next we meet.
Romeo and Juliet, act ii., sc. 2.

(11) *Titania.* An odorous chaplet of sweet summer-buds.
Midsummer Night's Dream, act ii., sc. 2.

(12) *Friar Laurence.*
I must up-fill this Osier cage of ours
With baleful weeds and precious-juiced flowers.
The earth that's Nature's mother is her tomb;
What is her burying grave that is her womb,
And from her womb children of divers kind
We sucking on her natural bosom find,
Many for many virtues excellent,
None but for some and yet all different.
O, mickle is the powerful grace that lies
In herbs, plants, stones, and their true qualities:
For nought so vile that on the earth doth live
But to the earth some special good doth give,
Nor aught so good but strain'd from that fair use
Revolts from true birth, stumbling on abuse:
Virtue itself turns vice, being misapplied;
And vice's sometimes by action dignified.
Within the infant rind of this small flower
Poison hath residence and medicine power:
For this, being smelt, with that part cheers each part;
Being tasted, slays all senses with the heart.
Two such opposed kings encamp them still
In man as well as herbs, grace and rude will;
And where the worser is predominant,
Full soon the canker death eats up that plant.
Romeo and Juliet, act ii, sc. 3.

(13) *Iago.* Though other things grow fair against the sun,
Yet fruits that blossom first will first be ripe.
Othello, act ii., sc. 3.

(14) *Dumain.* Love, whose month is ever May,
Spied a blossom passing fair
Playing in the wanton air;
Through the velvet leaves the wind,
All unseen, can passage find.
Love's Labour's Lost, act iv., sc. 3.

(15) Fair flowers that are not gathered in their prime
Rot and consume themselves in little time.
Venus and Adonis.

(16) The flowers are sweet, the colours fresh and trim,
But true sweet beauty lived and died with him.
Ibid.

(17) Rough winds do shake the darling buds of May.
Sonnet 18.

(18) With April's first-born flowers, and all things rare,
That Heaven's air in this huge rondure hems.
Sonnet 21.

(19) The summer's flower is to the summer sweet,
Though to itself it only live and die;
But if that flower with base infection meet,
The basest weed outbraves his dignity:
For sweetest things turn sourest by their deeds—
Lilies that fester smell far worse than weeds.
Sonnet 94.

(20) Yet nor the lays of birds, nor the sweet smell
Of different flowers in odour and in hue
Could make me any summer's story tell,
Or from their proud lap pluck them where they grew.
Sonnet 98.

"Of all the vain assumptions of these coxcombical times, that which arrogates the pre-eminence in the true science of gardening is the vainest. True, our conservatories are full of the choicest plants from every clime: we ripen the Grape and the Pine-apple with an art unknown before, and even the Mango, the Mangosteen, and the Guava are made to yield their matured fruits; but the real beauty and poetry of a garden are lost in our efforts after rarity, and strangeness, and variety." So, nearly forty years ago, wrote the author of "The Poetry of Gardening," a pleasant though somewhat fantastic essay, first published in the "Carthusian," and afterwards re-published in Murray's "Reading for the Rail," in company with an excellent article from the "Quarterly" by the same author under the title of "The Flower Garden;" and I quote it because this "vain assumption" is probably stronger and more wide-spread now than when that article was written. We often hear and read accounts of modern gardening in which it is coolly assumed, and almost taken for granted, that the science of horticulture, and almost the love of flowers, is a product of the nineteenth century. But the love of flowers is no new taste in Englishmen, and the science of horticulture is in no way a modern accomplishment. We have made large progress in botanical science during the present century, and our easy communications with the whole habitable globe have brought to us thousands of new and beautiful plants in endless varieties; and we have many helps in gardening that were quite unknown to our forefathers. Yet there were brave old gardeners in our forefathers' times, and a very little acquaintance with the literature of the sixteenth century will show that in Shakespeare's time there was a most healthy and manly love of flowers for their own sake, and great industry and much practical skill in gardening. We might, indeed, go much further back than the fifteenth century, and still find the same love and the same skill. We have long lists of plants grown in times before the Conquest, with treatises on gardening in which there is much that is absurd, but which mark a practical experience in the art, and which show also that the gardens of those days were by no means ill-furnished either with fruit or flowers. Coming a little later, Chaucer takes every opportunity to speak with a most loving affection of flowers, both wild and cultivated; and Spenser's poems show a familiar acquaintance with them, and a warm admiration for them. Then in Shakespeare's time we have full records of the gardens and gardening which must have often met his eye, and we find that they were not confined to a few fine places here and there, but that good gardens were the necessary adjunct to every country house, and that they were cultivated with a zeal and a skill that would be a credit to any gardener of our own day. In Harrison's description of "England in Shakespeare's Youth," recently published by the new Shakespeare Society, we find that Harrison himself, though only a poor country parson, "took pains with his garden, in which, though its area covered but 300 ft. of ground, there was 'a simple' for each foot of ground, no one of them being common or usually to be had" ("Edinburgh Review," July, 1877). About the same time Gerarde's Catalogues show that he grew in his London garden more than a thousand species of hardy plants, and Lord Bacon's famous "Essay on Gardens" not only shows what a grand idea of gardening he had himself, but also that this idea was no Utopian idea, but one that sprung from personal acquaintance with stately gardens, and from an innate love of gardens and flowers. Almost at the same time, but a little later, we come to the celebrated "John Parkinson, Apothecary of London, the King's Herbarist," whose "Paradisus Terrestris," first published in 1629, is indeed "a choise garden of all sorts of rarest flowers." His collection of plants would even now be considered an excellent collection, if it could be brought together, while his descriptions and cultural advice show him to have been a thorough practical gardener, who spoke of plants and gardens from the experience of long-continued hard work amongst them. And cotemporary with him was Milton, whose numerous descriptions of flowers are nearly all of cultivated plants, as he must have often seen them in English gardens.

And so we are brought to the conclusion that in the passages quoted above in which Shakespeare speaks so lovingly and tenderly of his favourite flowers, these expressions are not to be put down to the fancy of the poet, but that he was faithfully describing what he daily saw or might have seen, and what no doubt he watched with that carefulness and exactness which could only exist in conjunction with a real affection for the objects on which he gazed, "the fresh and fragrant flowers," "the pretty flow'rets," "the sweet flowers," "the beauteous flowers," "the sweet summer buds," "the blossoms passing fair," "the darling buds of May." H. N. Ellacombe.

Food Reform.—I hear something of the projected establishment of a "Dietetic Reform Club," with a view of affording dining accommodation to vegetarians visiting London. The promoters of the movement would do better, I fancy, could they open a few good vegetarian restaurants in the metropolis, open to all and sundry. I am not wedded fanatically to the doctrine of wholly abstaining from animal food; but I cannot help thinking that most English people, taking one month with another, eat a great deal more meat than is good for them. But where are you to get a succulent vegetarian dinner? If you try the system in your own house (not constraining other people to follow your example), the cook, after a few days, gives warning, as "not been used to them outlandish ways;" and your family, while scornfully suffering you to go your own way, secretly opine that you are either out of temper or growing stingy, or going mad.—G. A. S., in "Illustrated London News."—[This is too true, one pities a vegetarian who has to exist away from his garden; and in any town that we know of food reform has little chance till garden food is good, fresh, and varied, and is as easily obtained as bread or beer.]

Poisonous Honey.—An accident which a short time since befell the war correspondent of the "Daily News" in Armenia, recalls the fact, long known but generally forgotten, that honey sometimes possesses virulently poisonous properties. In this case the correspondent having drunk some water sweetened with honey was shortly afterwards seized with headache, vomiting, coldness of the extremities, temporary blindness, followed by a cataleptic state that appeared to bring him to the verge of death. Suspicion of an attempt to poison fell upon an innkeeper and he was arrested, but an examination of his honey, which was from the Batoum valley, where Hemlock and Henbane grow abundantly, revealed the source of the injury. It is interesting to note that this incident occurred within a few miles of the spot where more than 2000 years ago a similar accident, but on a larger scale, happened to the "ten thousand" during their celebrated retreat. Xenophon says that two marches from Trebizonde the Greeks encamped in some villages that had been abandoned, where there were a great number of beehives. All the soldiers who ate of the honey suffered from delirium, vomiting, purging, and inability to stand. Those who ate but little appeared intoxicated, whilst of those who ate more some were raving and others seemed to be dying. The soldiers lay on the ground as after a defeat, and a similar consternation reigned. None died, however, the principal effects passing off next day, though three or four days afterwards the sufferers had the appearance of sick people who had used a violent remedy. Dioscorides, Pliny, and other authors also mention poisonous honey. Pliny attributes the poisonous properties of one honey from this district to the bees frequenting a plant fatal to the beasts of burden and to goats in particular, which he calls Aegolethron, or Goat's-death, a plant that (according to the "Pharmaceutical Journal") has been identified with Azalea pontica.

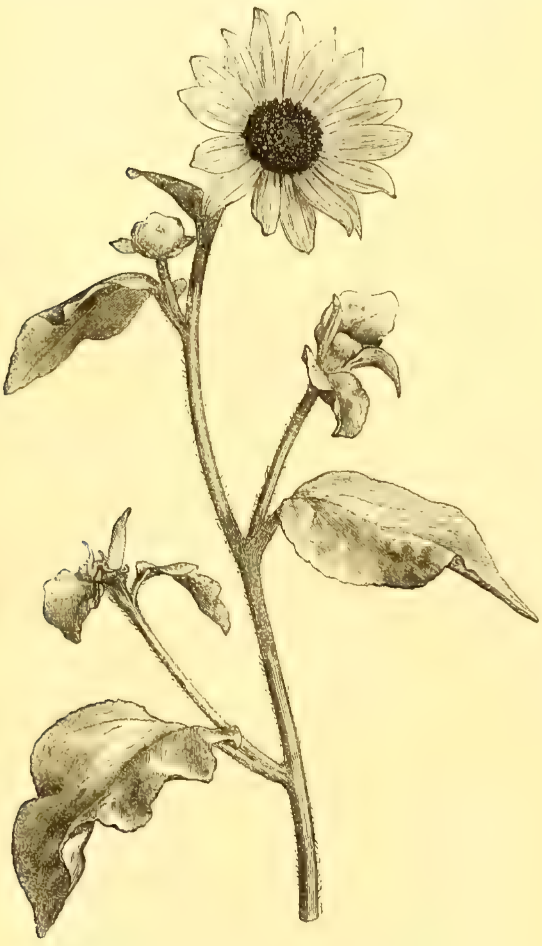
Protecting River-sides.—Willows luxuriate in the immediate vicinity of water: they throw out thick matted roots in abundance, which protect the bank, while the annual cuttings of the wood will in most instances be equal to the heritable value of the land they occupy. There are many instances to be met with where much valuable land is lost through neglect, and landowners and tenants would not only be adding countless and varied charms to the landscape, but improving and enriching the district, were proper attention bestowed to the utilizing of river-sides. That river-sides can be utilized to return a fair remunerative rent must be admitted as a fact if we calculate that, according to a writer in the "Journal of Forestry," 6000 tons of Willows are annually imported and sold in the English market at £5 10s. per ton. Surely British economy can compete with foreign industry, and the £33,000 worth of Willows annually brought from Holland and France successfully cultivated at home. Willow is easily propagated, and requires little or no attention either in planting or after treatment. Black Willow or "Sallow" forms an excellent hedge planted along the verge of rivers, and beyond the cost of planting is attended with no expense.

THE FLOWER GARDEN.

HELIANTHUS ARGOPHYLLUS.

Less remarkable for the dimensions of its flower-heads than the common Sunflower and its varieties, the Helianthus argophyllus possesses several advantages over these plants, in the greater abundance of its capitules, its more graceful habit of growth, and in the silvery grey colour of its foliage. It usually grows from 4 ft. to 5 ft. high, and branches to the very base, the branches themselves being much ramified—an arrangement which ensures an abundant supply of flower-heads. These are about 3 in. across, the ray-florets being a bright yellow colour, and the disc of a blackish-purple. The whole is densely clothed with a soft grey pubescence, especially the younger branches, which gives it a silvery aspect to which its specific names alludes. There is, however, often considerable variation in this feature among the seedlings, and it is found necessary to save seed only from those plants which exhibit the silvery pubescence in a marked degree. In situations where it may not be desirable to allow the plant to attain its full height, it may be kept dwarf by stopping the leading shoots. This species and the equally interesting H. cucumerifolius of more recent introduction from the same region (Texas) are well suited for small gardens where the coarser species would be out of place.

W. T.



The Silvery Sunflower (Helianthus argophyllus).

Brugmansias Planted Out.—These are exceedingly effective when planted out-of-doors in summer, or plunged in pots so that the roots can find egress. The large drooping blossoms are produced in abundance, and make effective objects in sub-tropical gardens. Well-established plants headed in closely will improve every year.—James Groom, *Henham.*

PLATE XCII.

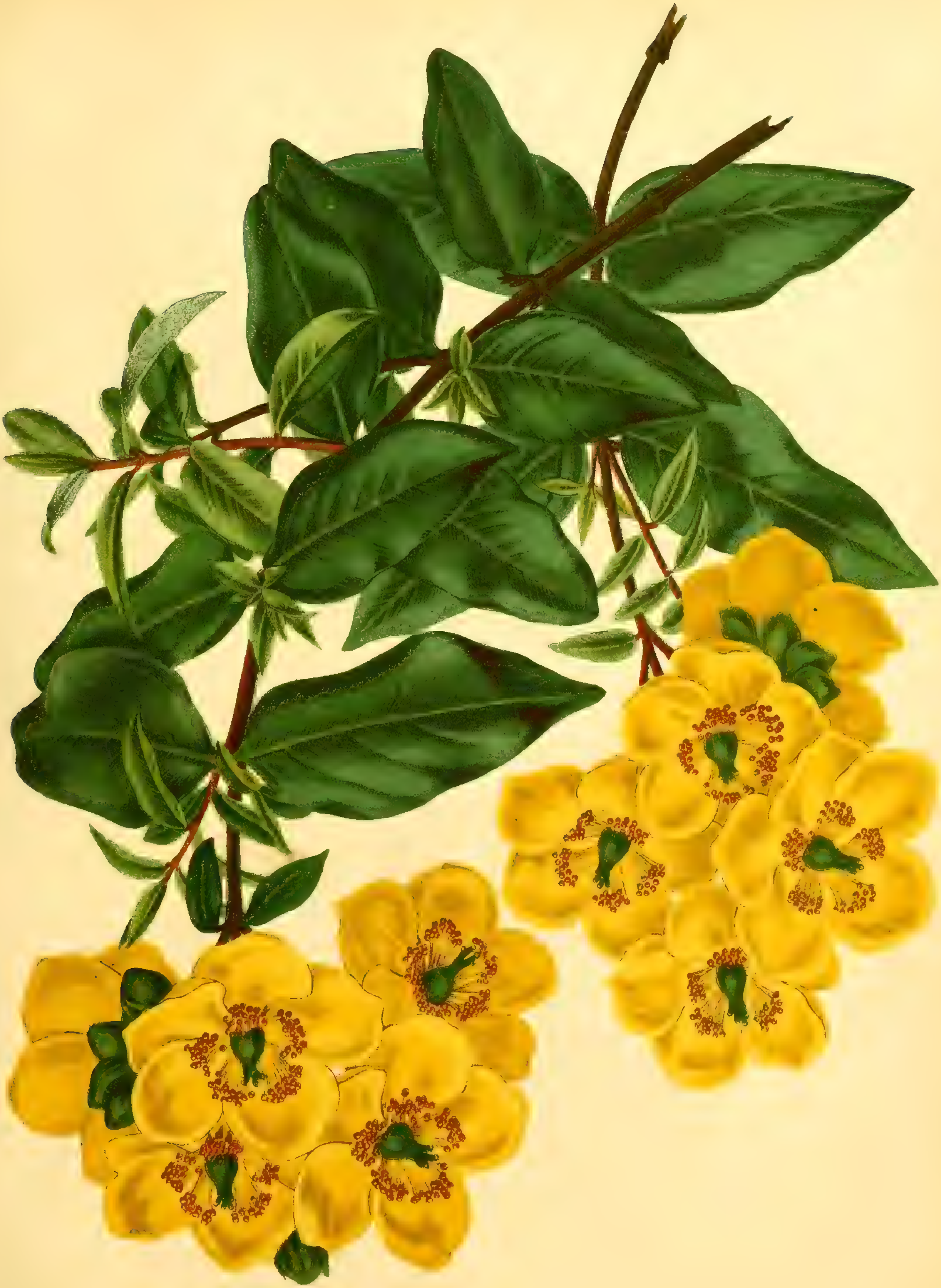
THE ST. JOHN'S-WORTS,

WITH A COLOURED FIGURE OF HYPERICUM PATULUM.

Several of the St. John's-worts are very beautiful, especially when set off by the dark foliage of other shrubs. The genus Hypericum is a very large one, and it has a very wide area of distribution, occurring in Arctic, temperate, and sub-tropical regions, and on the mountains of most tropical countries. Upwards of 150 species are known, and they are chiefly spread over temperate Europe and Asia, a few extending north of the Arctic circle. Nearly a score of species are found in the mountains of India, being spread over the Himalayan range and the mountains of the peninsula, and two are abundant in Ceylon. Six or eight species have been collected in the mountains of tropical Africa, two or three of which extend to the Cape of Good Hope, and one to the Isle of Bourbon. H. japonicum and gramineum, both widely dispersed species, are abundant in New Zealand and the eastern side of Australia. In America St. John's-worts abound in certain parts, from Canada southward through the mountains of Mexico and South America to Chili. And in all these distant regions it is not difficult to distinguish them, for although the foliage of different species is very diverse, they possess in common an unmistakable family likeness. With few exceptions the flowers are yellow, but those of H. virginicum are tinged with pink, according to Dr. A. Gray's description, or quite red, as figured in Andrews's "Botanists' Repository." There are also some white-flowered species, as I learn from Bentham and Hooker's "Genera Plantarum," which I suspect are South American, but I have no books at hand to clear up this point. There is also one Indian species described as having large white flowers which turn yellow. None of the South American species appear to have been introduced into European gardens. They are chiefly remarkable for the great variety of foliage they display. Some of them resemble Heaths; others are more like Junipers; and H. connatum has connate leaves like the Yellow-wort, Chlora perfoliata, but they are conspicuously veined and coriaceous. The genus is represented by nine indigenous species in the British Islands, and two or three others are more or less perfectly naturalized; amongst them are some that rank with the most ornamental, and are included in the following selection. Although upwards of fifty species have been introduced and cultivated at different times, there is too much sameness in their general character to admit many of them in an ordinary garden. All the species are herbs, or shrubs of small size, with opposite, undivided leaves, commonly covered with transparent glands or black glandular dots. The stamens in nearly all the species are very numerous and conspicuous, and united in three or five tufts, and the three or five styles afford distinctive characters of the species.

Spreading St. John's-wort (Hypericum patulum—Thunberg).—This fine species was discovered by Thunberg, in Japan, nearly a century ago, but it was first introduced into this country about twelve years ago. Seeds of it were sent from Japan by the unfortunate Richard Oldham, one of my most esteemed associates during my early days at Kew, who, after a year or two's successful collecting, fell a victim to dysentery. Being cut off so young, there is little in our gardens to keep his name alive; and it is, therefore, a pleasure to me to be able to put it on record here in connection with one of the comparatively few living plants for which we are indebted to him. This plant, on the authority of Thunberg, was commonly cultivated in Japanese gardens at the time of his visit, and he also observed it growing wild. But it is not confined to Japan, being common in the temperate regions of the Himalayan Mountains at an elevation of between 3000 ft. and 7000 ft., whence a small-flowered variety was introduced at the beginning of the present century by Messrs. Whitley, Brame, & Milne, of the Fulham Nursery. This was figured in the "Botanical Magazine," t. 2375, under the name of H. uralum. Thus it will be understood that in its wide range this species presents considerable variation, and some of the varieties are less ornamental than the one portrayed in the accompanying figure. It is a shrub from 1 ft. to 3 ft. high, with spreading branches, the younger ones having a red bark, and the petals are twice as long as the stamens. It is needless to dwell on its other characters, but in the descriptions of other species, this will be taken as the basis of comparisons. Its flowering season is September and October, and its hardiness seems to be undisputed.

Hooker's St. John's-wort (H. Hookerianum—Wight and Arnott; H. oblongifolium—Hooker, Bot. Mag., t. 4949).—This is closely allied to H. patulum in floral characters, but it is of larger dimensions in all its parts. It forms a shrub 6 ft. to 8 ft. high, with reddish-brown branches, and leaves, in luxuriant specimens, 3 in. to 4 in. long, and the flowers are upwards of 2 in. in diameter. A native of the mountains of Northern India, in the Sikkim Himalaya, Supplement to *The Garden* Office, 37, Southampton Street, Covent Garden, London.



ST. JOHN'S WORT.

at from 8000 ft. to 12,000 ft., and Khasia at from 4000 ft. to 6000 ft., also in the Nilghiri Mountains. It was introduced in 1823, but it is now very rare, if it still exist in English gardens. It is described as a truly lovely hardy shrub.

Nodding St. John's-wort (H. cernuum—Roxburgh; H. speciosum—Wallich).—A shrubby species, 3 ft. to 6 ft. high, with lanceolate leaves, 1 in. to 3 in. long, and white eventually yellowish flowers, 2 in. in diameter, in terminal clusters of three to five. It is a native of western temperate Himalaya, from Kumaon to Sirmour, at from 5000 ft. to 7000 ft. Not introduced.

Nepaul St. John's-wort (H. nepalense—Choisy).—A trailing plant, with slender, weak stems; leaves less than 1 in. long, and small flowers. Not particularly ornamental, but very hardy, inhabiting the Himalaya Mountains at an altitude of from 10,000 ft. to 12,000 ft. Introduced in 1826.

Kalm's St. John's-wort (H. Kalmianum).—A North American dwarf, shrubby species, with oblong-lanceolate leaves about 1½ in. long, and numerous flowers about ¾ in. across. The stamens are very numerous, as long as the petals, and scarcely united at the base, and it has five styles; the petals are narrow and do not overlap each other, as in the foregoing species. H. prolificum is closely allied, differing mainly in its broader foliage. Both were introduced about the middle of the last century, and do not present any remarkably ornamental features.

Fetid St. John's-wort.—This is the shrubby species commonly met with in English gardens, and deserving of notice for its hardiness, capability of flourishing in almost any soil, and for its long flowering season, often remaining in bloom till the end of October. It is a much-branched shrub, 3 ft. to 5 ft. high, having oblong-lanceolate, obtuse leaves, about 2 in. long, and yellow flowers 1½ in. in. diameter, borne in clusters at the tips of the branches. The leaves emit a peculiar goat-like odour when crushed, and the flowers of this species are easily recognised by the three very long styles, which project considerably beyond the stamens. A native of the south of Europe, introduced in 1640. It grows well in partial shade.

Tutsan (H. Androsæmum).—This native species deserves mention on account of the agreeable odour exhaled by its leaves when dried, which they retain for years if kept in a book. It is very similar, if not identical, with coumarin, the fragrant principle of the Tonquin Bean, Fenugreek, and some other plants. A native of hedgerows and woods in the south and west of England. The leaves are 2 in. to 4 in. or more in length, and the flowers relatively small. In Sussex it bears the popular name of Sweet Amber. The name Tutsan is said to be a corruption of the French *toute saine*, which might be rendered *heal-all*. Formerly the leaves were applied to open wounds.

Rose of Sharon or Aaron's Beard (H. calycinum).—In its way, this is the most valuable of the genus, as it is an admirable plant for clothing shaded or partly shaded banks and woods. Moreover, its flowers are larger than those of any other species, being from 3 in. to 4 in. in diameter, and of a beautiful bright yellow, contrasting well with the large, glossy, dark green leaves. It seems almost superfluous to add that it is a prostrate almost evergreen shrub, because it is the species most commonly seen in gardens, a distinction it fully merits. A native of South-eastern Europe, now established in a wild state in many parts of these islands.

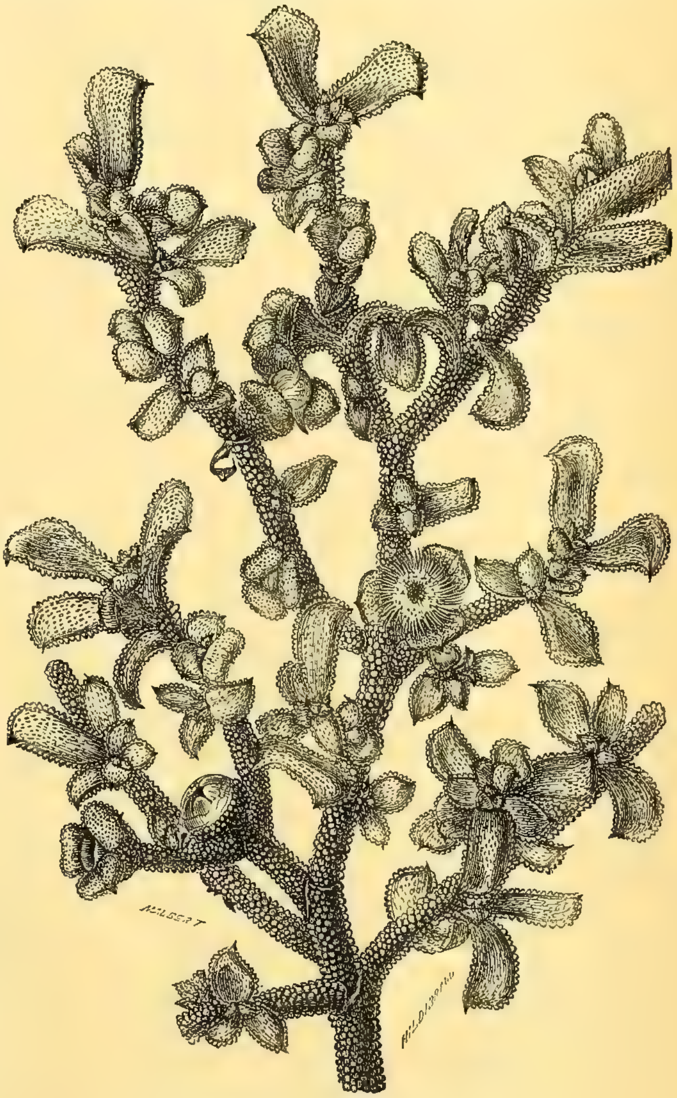
Elegant St. John's-wort (H. pulchrum).—An herbaceous species, and one of the prettiest of our native plants, growing in dry copses and on heaths and commons. Its slender, flexible stems rise to a height of 1 ft. to 2 ft., and are clothed with small, cordate, obtuse leaves, and terminate in many-flowered panicles. The flowers are from ½ in. to ¾ in. in diameter, yellow tinged with red, and the petals bordered with black glands; the anthers also are red. Said to be the badge of the McKinnons. It is very widely dispersed in Europe northward into the Arctic regions.

Woolly St. John's-wort (H. Elodes).—A pretty native plant for the banks of pools and lakes. It has short stems, clothed with roundish, woolly leaves. The pale yellow flowers are small, but the red glandular dots on the calyx give them an attractive appearance. This and the next differ from all the others in having from nine to fifteen stamens only.

Red-flowered St. John's-wort (H. virginianum—Andrews, Bot. Rep., t. 552).—At first sight this plant, as figured by Andrews, reminds one more of a Boronia than a Hypericum. A hardy, herbaceous plant resembling the last in habit, and interesting on account of the colour of its flowers, but not particularly showy, as "the flowers are of short duration, and only a few are open at the same time." A native of North America from Canada southwards; introduced into England by a Mr. Lyons in 1840. W. B. Hemsley.

ANNUAL MESEMBRYANTHEMUMS.

Such a long-winded name as Mesembryanthemum for an annual almost alarms one, and that, too, belonging to our common Ice-plant (M. crystallinum), of which the annexed is a representation, a plant grown in most large gardens for garnishing purposes; it is also sometimes used as a pot plant, but it is most effective when planted out on rockwork, or better still, on some old terrace wall, if such exists, allowing it to fall over its face. It will grow from 3 ft. to 4 ft. in a season, and on warm days has a cool and refreshing look. Its flowers are unimportant compared with the crystal-bespangled stems and foliage, and the richer the ground the greater the crystal development. Seeds of it should be sown in heat in March. There are two varieties of it, one with red and the other with white flowers. I may add that this is not the Ice-plant of cottage windows; that is a perennial named M. cordifolium. M. pomeridianum is a strong-growing species, with broad, spathulate foliage and large, purple and rose coloured flowers. As its specific name indicates, it flowers in the afternoon. It is not so common a kind as the last, but it well deserves a place on a south border. M. tricolor is perhaps the most showy of the annual Mesembryanthemums; it is a neat plant with cylindrical foliage, and is not a creeper; it grows 6 in. or 8 in. wide and 4 in. or 6 in. in height; of its flowers, which are abundant, some are purple and the others rose, the result being a good contrast; this species should be sown in a sandy soil in the open garden about the end of April, as it dislikes transplantation, and it lasts longer in the ground than in a pot. M. pinnatifidum is a pretty little plant which has the habit of M. crystallinum, but is not so rampant a grower; the foliage is semi-pinnate, and the flowers small and red in colour. M. anatomicum is



Ice-plant (Mesembryanthemum crystallinum).

another kind, curious rather than showy; it is not generally grown as an annual, but it does best treated in that way; it creeps on the ground, and seems to get rid of its epidermis as quickly as possible, a circumstance which gives it the appearance of a skeleton.—J. Croucher, *Hammersmith.*

Rose Hedges.—Without discussing the comparative advantages of budding or grafting Roses, or of growing them on their own roots, it is sufficient to state here that the Rose may be easily propagated both by division and cuttings, and when extensive planting is resorted to for furnishing borders, beds, or shrubberies, either plan may be adopted. The flowers on such plants may not, perhaps, be what are called first-class, but it costs little to have plenty of them, and they are not so very inferior after all. Years ago we divided many hundreds of old Rose trees, planting them in good soil, and all did as well as could be desired. The work was begun in October and finished in November. The plants were split up into fragments with a bit of root to each, and planted and mulched at once for the winter. A large number of plants were reserved to form a Rose hedge; these were shortened back very little at pruning time, and were planted against a wire fence, on to which they were spread out and tied, and they now form a hedge which produces more flowers than all the Roses in the place do together, and they are not few. Our collection embraced a miscellaneous variety, but for hedge planting it is best to select the most vigorous-growing kinds and plant tolerably thick, and it is better if the hedge be not allowed to grow more than 4 ft. or 5 ft. high, unless climbing Roses are used; but I am speaking of a hedge that is allowed to grow pretty much as it likes, without troubling to cut or train much of it. Ours is clipped off in February, and the branches are spread out here and there, or layered to fill up gaps, but that is all. In making Rose plantations, too much stress can hardly be laid upon mulching the roots to exclude frost in winter. Many of the weaker kinds of Roses, and in severe winters even the hardy kinds, often perish, particularly in the north and in cold districts, if not mulched, which throughout the cold or droughty springs seems just to work wonders. Any loose vegetable refuse will do for the purpose, but nothing surpasses well-rotted stable manure laid on thickly.—C., in the "Field."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Golden Moneywort (Lysimachia Nummularia aurea).—This golden variety of the old Creeping Jenny will be welcome everywhere both as a basket plant and to plant round the edges of window boxes or on rockwork.—E. H.

Acanthus Candelabrum.—I noticed a plant of this flowering finely in the herbaceous department at Kew the other day. It is a striking background plant; or it would have a good effect as a single specimen in some quiet grassy nook.—E. H.

Helianthus multiflorus fl.-pl.—Looking over a border of herbaceous plants a few days ago, I was struck with the rare beauty of some large clumps of this Sunflower. They had been established for years, and had thrown up striking heads of bloom. These, associated with herbaceous Phloxes, Anemone japonica and its varieties, Physostegia imbricata, and some of the Pompone Dahlias, would make a rare display till late in autumn. This fine Helianthus should be included in every group of showy perennials.—D.

Primroses and Cowslips.—A specimen of an abnormal floral development found by Prof. M'Nab at Howth, in Ireland, was shown to the British Association. It consisted of a Primrose plant, from the stem of which grew a true Primrose and a Cowslip flower. Accompanying it were specimens of a hybrid plant, the flowers of which partook of the nature of Cowslips and Primroses, and the object of displaying them with the abnormal growth was to suggest how the mutation was probably occasioned.

Bed-straw for Carpeting Ground.—A few years ago I found amongst some odd gatherings from Axe Edge a few tufts of Galium saxatile, with which every mountaineer who knows anything of botany is familiar, because of the exquisitely beautiful beards and carpets of snow-white flowers it presents to view on moors and mountains in the later days of summer. These tufts were, with other things of the kind, planted in peat and forgotten. They lived and grew, and one of the results is to prove that this particular Galium or Bed-straw is a valuable surfacing plant for beds of Liliums, or for any purpose, indeed, for which a close green Moss-like growth of herbage may be required. It needs a peaty or gritty soil, and apparently starvation is good for it as a garden plant, for when thoroughly starved it forms a very close mat-like growth, and does not flower, so that as a green surfacing it is as nearly perfect as can be imagined. In a border here, the chief occupants of which are Liliastrums and hardy Cyclamens, this Galium saxatile has obtained a hold, and forms a continuous carpet of green, and, being somewhat starved, is exceedingly Moss-like and never flowers. Those who understand the use of the Mossy Saxifrages, small-leaved Thymes, and Mints for surfacing, together with shades of green, rich, carpet patterns, are advised to consider the claims of this Bed-straw; but it is peculiar in its requirements, and perhaps for that reason the more valuable, as it may come in well where other equally desirable plants would do no good.—"Gardeners' Magazine."

"SCIENCE" AND FLOWER FERTILIZATION.

We are inclined to think that those who know most about the fertilization of plants will be least inclined to agree with some of the statements in the following extract, which strike us as being most remarkable for loose reasoning and boldness of assertion. The following is culled from the report published in the "Times":—Sir John Lubbock, M.P., recently delivered a lecture in the Royal Pavilion, to the members of the Brighton Literary Association, on the "Relation of Plants to Insects." If flowers were useful to insects, he said, insects were indispensable to flowers. The beautiful and varied colours of many flowers were due to the existence of insects. The hues, lines, and shades found in day flowers were invariably absent in night flowers, and the reason was that, as they bloomed at night, they could not be seen. Those flowers which were not fertilized by insects did not possess either colour, scent, or honey. In the great majority of instances the relations between insects and flowers were mutual, but in some plants it was different. There was a North American plant which actually seized and devoured the insect which alighted on its leaves. By means of a diagram Sir John illustrated this process by which the insect-devouring plant captured its prey. Representations of open and closed leaves were shown. Sir John said that a number of interesting experiments had been tried with those leaves, and it had been found that they very much disliked cheese, which disagreed with them and made them extremely ill. He then entered into a description of the simple structure of flowers, and dwelt at considerable length on the results of the fertilization of flowers by different causes. Those fertilized by insects reached the highest state of excellence. Self-fertilization, he said, tended to dwarf the flowers. In the case of a Convolvulus, experiments had been tried by which it was shown that where the flower had been self-fertilized it only grew to a height of 5 ft., while a flower fertilized by the pollen of another plant had grown to a height of 7½ ft. The hon. lecturer then mentioned some experiments to test if bees were or were not able to distinguish colours. He said he had taught a bee to come to a certain place for honey, and he had then placed a quantity of honey on some blue paper. He allowed the bee to come to this honey several times, and he then placed some more honey on a piece of orange-coloured substance. During the absence of the bee on one occasion he took advantage of the opportunity and shifted the positions of the two lots of honey. The bee came as usual to the spot where the blue paper had formerly been placed, and stood as if in doubt near to the orange-coloured substance, and then it dashed over to the blue paper and commenced feeding from it as usual. The lecturer said he had experimented with a variety of colours and found it was always the case; if they used a bee to take honey from a certain colour, he would always select that colour from among others. [It is amusing to notice that the lecturer can give the last passage as a proof of his proposition.] It was fortunate for them that bees enjoyed the same colours and liked the same smells as they did, as there were certain flowers which were fertilized by flies, who preferred livid yellow, dingy red, and very unpleasant-smelling flowers, and they were invariably accompanied by a very disagreeable odour. Therefore, if the majority of flowers were fertilized by flies, they would find that their gardens lost many of their present charms. After referring to the physical action of flowers of the class fertilized by insects, the lecturer went on to refer to the different plants which repelled the visits of insects. Why were some flowers sticky and some slippery, and what was the use of hair upon plants? These conditions were to repel the visits of unwelcome insects who could not make use of the pollen they robbed the flower of for fertilizing purposes. He proceeded to explain the physical adaptation of insects to the flowers with which they were so nearly allied. Referring again to plants, he said that they found that at certain particular hours flowers closed. This habit of going to sleep was very curious, and different flowers kept different hours. The reason for it, however, was obvious, for flowers which were fertilized by moths and other night-flying insects would derive no advantage from being open by day, and on the other hand, those fertilized by bees would gain nothing by being opened at night. The closing of flowers, he believed, had reference to the habits of insects, and it must be confessed that the opening and closing of flowers were gradual, and that the hours varied greatly according to circumstances. Although it would be possible to construct a flower clock, he was sure in these days it would not be of very much use. The arrangement of the colours, form, and scent of flowers—all had reference to the visits of insects, and were disposed in such a manner as to secure the great object for which these visits were destined, so that it came to pass that just as gardeners, by selecting seeds from the most beautiful varieties of flowers, begat others as beautiful, so insects by the fertilization of the largest and most beautiful flowers unconsciously, but not the less effectively, contributed in a large degree to the beauties of our woods and fields.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Richardia æthiopica that were planted out in the spring should now be lifted with care, in order to avoid injury to the roots, placing those plants with a single crown in 6-in. pots, and others in pots proportionate to their size; but where the spring planting-out system has been adopted (which is by far the best for this useful decorative subject), large pots are unnecessary. This again is one of the plants that will bear the soil being kept quite moist immediately after potting, which is necessary to prevent the leaves from flagging. A cold frame, pit, or greenhouse will answer to keep them in for some weeks until they get established in the pots, when later on through the winter they can be forced into flower by putting them in heat, for which purpose they are well adapted.

Roses in Pots in the open air, especially the more tender Chinese varieties, should not have the soil saturated with moisture, as, like most other hardy plants, their roots when in pots, are much more susceptible of injury from this cause than when planted out. If a few loose lights can be temporarily fixed over them, they will thrive much better than if fully exposed.

Tree Carnations in pots for winter forcing and Mignonette should be put in frames if the weather be very showery; if fine, and stood in a sheltered place, they will take no harm uncovered for a few days yet, as the more air they get at this time of the year the better.

Fuchsias that have been in the open air after flowering may remain out so long as there is no sign of frost sufficient to kill their tops, on the appearance of which their heads may be cut in freely, previously allowing the soil to get tolerably dry. They can be stored under a greenhouse stage, or in any similar place where they will receive a little light, keeping the soil through the winter slightly moist. So treated they will grow away much freer in the spring than if the roots be allowed to become dust-dry.

Bedding Pelargoniums.—Where a sufficient quantity of these have not been put in, some cuttings may be taken off now, using good-sized, moderately firm shoots for the purpose, stripping off all leaves except two or three small ones at the points; they may be put closely, say eight or ten in 6-in. pots, in which way they will occupy less room through the winter than the earlier-struck plants, but having rooted more lately, they will not be so strong, or calculated to bloom so soon in the spring as the earlier-struck plants. They can be placed at once in a cold frame or pit, or on a shelf in a greenhouse or vinery close to the glass, giving only as much water as will keep the soil slightly moist; in this way the greater portion will root through the autumn.

Kitchen Garden.—Where Cauliflowers, sown last month for wintering in frames and under hand-lights, have come up too thickly, they should be at once thinned sufficiently to allow space for their making short, sturdy growth, until large enough to plant in the frames, &c. The same applies to late sowings of Cabbages, as when the above are allowed to become overcrowded in the seed-bed, they are so weakened as to be ill-calculated to withstand the winter.

Salad.—Continue to plant out more Lettuce and Endive at short intervals. Complaints are often made of blanks in the supply of these through the winter and spring, the cause of which may invariably be traced to not sowing and planting them in sufficient quantities for successional growth. For the late plantings the driest position in the garden should always be selected; this is especially the case where the land is naturally damp, or of a moisture-holding character. In such places, beds formed so as to give a considerable slope that will throw off the water, will be found much the best.

Spinach.—A little more Winter Spinach may also be sown; this will come in for use during the spring, and should the winter be severe such sowing will be much more likely to withstand it than the earlier ones, and it will not be disposed to run to seed so soon in the spring, and will consequently furnish a later supply. The earlier crops of Winter Spinach should be thinned out so as to leave the plants about 6 in. apart, but it is not necessary to reduce them to this all at once, as if allowed to stay doubly as close for some time longer they can then be thinned out for use as required.

Turnips sown late should receive timely thinning so as to give them plenty of room, or they will make little more than tops; and as the time for their growing is now short this work must not be delayed.

Onions.—Exceptionally late as spring-sown Onions are this year, it will now be quite time to take them up. There is no better way of preserving them than at once tying them up in moderate-sized bunches and hanging them in an airy, cool place, either in a shed or against the wall of a building with a projecting eave; this is especially necessary where they are required to be kept as late into the spring as possible. Brown Globe and James's Long-keeping are two excellent varieties for this purpose, and if kept quite cool through the winter they will remain plump and hard without showing a disposition to grow in the spring until some weeks later than if they had been kept in warmer places. The frost of any ordinary winter will not injure them when dry, even when exposed to the open air.

Carrots in many cases will now be ready for taking up: if allowed to remain too long in the ground they commence forming new root fibres, which greatly injures their quality. Carrots sown late to stand through the winter must be thinned out to 3 in. or 4 in. apart in the rows.

Globe Artichokes.—All flower-stalks should now be removed from these with the larger leaves attached to them right from the bottom, so as to fully expose the young suckers at their base; where this is not done the latter are so soft and weak through being shaded by the larger leaves as to be in the worst possible condition for wintering satisfactorily. This Artichoke is all but hardy, and where it perishes by frost the cause is generally to be attributed to the neglect of the above precaution.

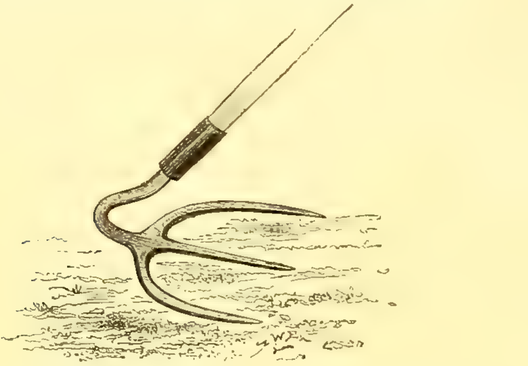
Celery.—Continue to earth up Celery as it is required for use, so as to allow sufficient time for its blanching, but do not apply more than a few inches of soil to the general crop required for winter and spring supply, as when it is earthed up to any considerable extent thus early it cannot possibly keep. All that is intended for later use should now have the suckers pulled out, and the smallest outside under leaves that will usually be found lying on the ground may also be taken off; but this removal of the leaves should not be carried on to too great an extent, as it checks growth. Each plant ought to be slightly drawn in with a piece of bast tied round it, yet not so as to bring it so close together as to prevent light and air getting to the young central leaves, but only as far as necessary to keep the outer ones from being broken by the wind; as a further support, 2 in. or 3 in. of soil may be drawn to them; this will not interfere with the application of water, which in dry seasons it is requisite to give during the remainder of this and the ensuing month

Groundwork.—All land that has been occupied by Dwarf or Early Runner Beans, Broad Beans, Peas, Spinach, Lettuce, or other exhausted crops, should at once be cleared and hoed, and all the weeds and vegetable matter sent to the refuse-heap. If a little lime be sprinkled amongst this to destroy slugs and their eggs, the material when rotten will be found very useful for digging into the ground, especially where the soil is of a heavy nature. Where Potato haulm is diseased many argue that it should be removed from the land and burnt, as if applied afterwards to the ground it subsequently disseminates disease. I have frequently tried this so far as to put the diseased tubers and haulm in a heap by themselves to rot, and have used the material the following spring as a dressing for Potatoes, and never could detect the slightest difference betwixt its effects and that of ordinary manure on the crop. Not only is the appearance of a kitchen garden much improved by the removal of all exhausted crops, but slugs and snails are much less troublesome, as they will not remain unless they can obtain shelter. There is no better remedy for the destruction of these pests than sprinkling the ground two or three times a year with newly-slacked lime; this is much more effectual than heavy dressings at longer intervals, as it not only kills them but it also destroys their eggs, and at no time can it be applied with greater advantage than during the autumn directly the ground is cleared.

Storing Apples and Pears.—Few seasons have occurred in which the Apple and Pear crop, especially late-keeping kinds, will require so little room for storing, yet their successful keeping so much depends upon the apartment intended as their store-house that a few words of counsel concerning it may not be out of place. With amateurs they are often stored under the worst possible conditions, namely, in upper rooms, garrets, or similar places, where the atmosphere is so dry as to extract the moisture from them, and this causes them to shrivel and become tough and leathery, and alike indifferent for dessert or cooking. Apples and Pears should always, where practicable, be kept in an apartment as cool as possible, with only just sufficient warmth to exclude frost, admitting but very little air except for the first few weeks after gathering (whilst the fruit is undergoing what is known as the sweating process), during which time Apples, to a greater degree than Pears, emit a quantity of moisture. The place in which they are stored should be on the ground floor, which should be paved with flag-stones, tiles, or other similar material, but not boards. I have found no better method of keeping dessert Apples than placing them in large glazed earthenware vessels covered with a little straw or dry Ferns; in this way they cannot be so readily examined for the purpose of picking out any that may be decayed, but if carefully handled in gathering so as to avoid the slightest bruising, there is little to fear from premature decay, and even where a few go bad it seldom affects those in contact with them to the same extent as Pears. Late-keeping varieties of Pears, such as Easter Beurré, Beurré Rance, and Ne Plus Meuris, will keep well in the same way, looking over them at intervals to remove any that show signs of decomposition. The non-absorbent nature of these earthenware vessels counteracts the disposition to shrivel to a greater extent than anything else I have been able to find, and on wet, sunless summers, such as the present has been in many parts of the kingdom, the inclination in these keeping sorts to shrivel or ripen prematurely is always greater than if the season had been bright and dry.

THE BURGHLEY CULTIVATOR.

I had half-a-dozen cultivators of this kind made this spring, and I find them most useful. In the beginning of April, when clearing off Brussels Sprouts, Broccoli, &c., I use them to prepare the land for early Potatoes, instead of digging it. Last August the whole of our winter Greens were mulched with fresh manure from the stables, and this, becoming thoroughly decayed, got well mixed with the soil by the cultivator from 3 in. to 6 in. deep, leaving the land like a bed of ashes; whereas, if the spade had been used, it would have been lumpy and unfit for early Potatoes, which like the land smooth. Fine shallow drills were drawn, and the Potatoes planted with good stiff sprouts, which were obtained by having been laid thinly on shelves. Thus treated, they were up and growing at once. Again, among growing crops, nothing is so desirable as to keep the ground well open, and this can be done by using the cultivator, of which the annexed is a good representation, except that the teeth are too much pointed; they should be more flattened or chisel-pointed.



Burghley. R. Gilbert.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

September 24.—Potting Humea elegans, Coleus, and Scented-leaved Pelargoniums. Filling up all frames and cold pits as they become empty with Lettuces and Endive. Planting early border with August-sown Cabbage plants. Cutting turf to stack away for potting purposes. Hand-weeding Strawberry quarters, and cutting off all runners, afterwards mulching the ground with well-rotted manure.

Sept. 25.—Sowing Mustard and Cress for succession. Taking up Alternantheras and potting them; also a few Coleus for stock. Removing all cuttings struck in heat to a cold frame to harden. Giving first-spawned Mushroom-bed a little warm water. Pricking out on a large border Carter's Heartwell Early Marrow Cabbage plants to stand the winter. Watering Pine-apples with manure-water; also late Peas, Cauliflowers, and Celery.

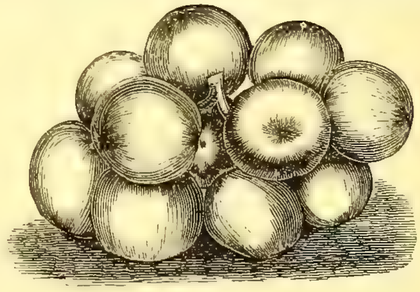
Sept. 26.—Potting variegated Ivy and a few Carnations. Rearranging Fernery. Earthing up French Beans in pots. Lifting a portion of the main crop of Carrots and stacking them away in dry sand in an open shed. Moving pot Vines out of pits and placing them against a south wall, to finish the ripening of the wood and fruit-buds. Examining all fresh-planted shrubs and putting a few stakes and ties to those likely to be injured by wind. Turning manure for Mushrooms and salting terrace walks. Gathering Louise Bonne of Jersey and Marie Louise Pears; also Wormsley Pippin Apples.

Sept. 27.—Taking up plants of Mesembryanthemum cordifolium and potting them for stock. Giving a top-dressing of soil to Cucumber beds. Storing away Caladiums on dry shelves. Earthing up Celery. Clipping hedges, and cleaning shrubbery borders. Gathering Coe's Golden Drop Plums and Barrington Peaches; also Ribston Pippins and Cornish Gilliflower Apples; and Flemish Beauty and Brown Beurré Pears.

Sept. 28.—Potting double white Primulas, Cinerarias, and Solanum capsicastrum. Clearing off a piece of Turnips, and manuring and digging the ground for other crops. Transplanting Early White Naples and Giant White Tripoli Onions. Gathering all unripe Tomatoes, and hanging them up in Vineries in a sunny position to finish ripening; also picking Cucumbers, Button Mushrooms, Cauliflowers, hard White Cabbage, and Capsicums for pickling.

Sept. 29.—Potting Hyacinths and Tulips; also Osborn's early-forcing French Beans. Taking up and potting Mrs. Pollock and Tom Thumb Pelargoniums. Gathering Passe Colmar, Dunmore, and Doyenné du Comice Pears; also Lucombe's Seedling, Court of Wick, and Cockle Pippin Apples. Fruit in use for dessert—Pineapples, Grapes, Peaches, Plums, Pears, and Apples.

Hathaway's Excelsior Tomato.—This is one of the best-shaped and handsomest of all Tomatoes. It is, however, said to be inferior in flavour to other kinds, and it is not quite so prolific. For exhibition purposes it is, nevertheless, considered to be one of the best; and a kind named Stamfordian (supposed to be a selection from it, the fruit of which attains a very large size) is also becoming popular as an exhibition variety.—S.



Lifting Potatoes Early—The other evening I was talking to a neighbour who remarked: "Last year I saved all my second earlies by lifting them early, and they were also of excellent eating quality, but this year I delayed the work a few days too long, and more than half of them are bad, and the remainder will not keep." I have noticed a wonderful variation, even in the same field or garden, in the same kinds, due entirely to the character of the soil. I have come to the conclusion that on dry sandy soils where the disease never assumes a virulent form Potatoes may bide their time, and the work be done leisurely if it suit the cultivator, and at taking the average of seasons on rich adhesive soil they should be lifted before the disease attacks them if the crop is to be saved. Supertuberation is another evil that would be avoided by early lifting. I find the best way of storing them when lifted early is to lay them in small heaps in some dry dark cellar or shed, and cover them with straw; or else place them in small narrow ridges in the open air, and well cover with straw and a thin layer of earth round the base and about half way up the ridges. In this position they will remain three or four weeks, and can then be sorted over and properly secured for the winter.—H.

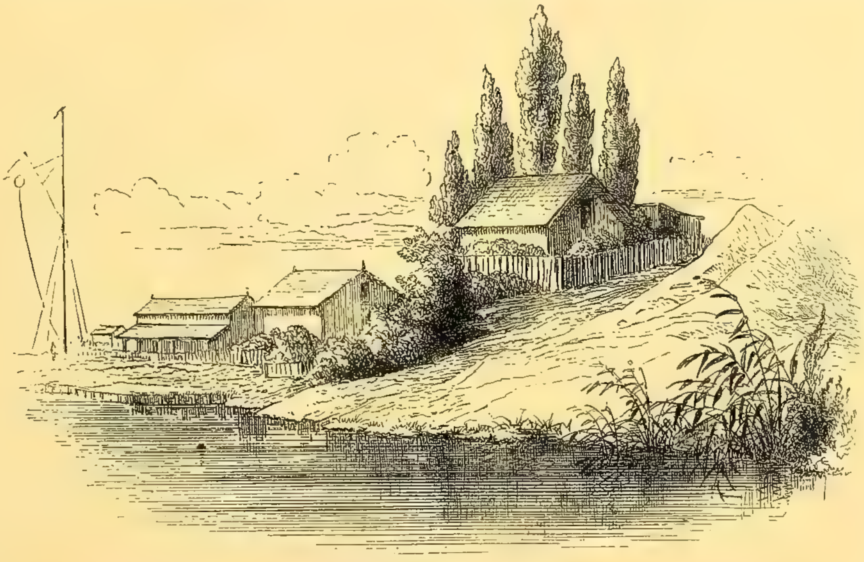
NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Green Tops of Peas for Soups and Flavouring.—Any one who has spare seeds of Peas may turn them to good account by sowing them thickly in boxes under glass, in succession, during the autumn and winter. The young tops should be cut off for use when about 4 in. or 5 in. high.—H.

Hundredfold Pea.—I have grown more than a dozen sorts of Peas this season, and nearly all of them have been kinds which are named in selections of Peas as the best in their sections; but none of them, however, has proved so productive as Hundredfold, the rows of which have been completely covered with dark green pods. It also yields a longer succession than any other, and I have been frequently told that it is the best Pea amongst the whole when cooked. Next year, therefore, the half of our Peas will be Hundredfold.—A. B. G.

GARDENING IN EGYPTIAN DESERTS.

The land of Egypt is one of the many regions where a fine climate and a glorious sun only make the country a desert without the aid of water. If we could only effect an exchange of some of our watery riches for their bright skies! Surely that must be considered one of the most noble of all the fine arts which can beautify an arid desert with all the charms of vegetation, even though it be at the cost of soil and water procured many miles away. At five miles interval along the Canal from Suez to Port Said, are picturesque little stations for signalling purposes (each being the residence of a Frenchman, who superintends the working of signals and telegraph block system by which the passage of ships is regulated), and most of these have pretty little gardens surrounded by a matted fence of pale yellow Reeds or a stately hedge some 12 ft. or 14 ft. high, of the Greater Reed (Arundo Donax). Here this plant is also seen in all its luxuriance, forming great rainbow-like patches 10 ft. or 12 ft. in diameter at the base, the wand-like, leafy stems curving gracefully outwards and forming a most effective screen from dry winds. Its vivid greenness is heightened by contrast with the neat whitewashed houses and other offices, each of which has a low-pitched overhanging roof like that of a Swiss châlet, and is rendered more picturesque and comfortable by the addition of shady, creeper-laden verandahs. As to the flowers, scarlet Nasturtiums, Pelargoniums of the Zonal section, Zinnias of divers colours, and Sunflowers seem especial favourites —singularly enough, however, the Sunflower, luxuriant as it is in our temperate English gardens, is here sadly deficient in vigour and stateliness; its co-partners, the particoloured Zinnias, are, however, perfectly at home, growing healthily, the profusion of their large flowers and the brilliancy of their colours being so marked as to raise a doubt as to their identity with our own varieties. Here and there a stunted Date Palm or two may be seen, but they do not thrive by the Canal, although there are fair specimens close to the " Well of Moses, " and elsewhere at Suez: the most stately and fruitful, however, affect the better-watered alluvial tracts bordering the Nile, or cluster beside the little fresh-water canals and irrigating channels by which fresh water is carried from the great river, these being fringed, moreover, with other vegetation, and especially by tall-growing Reeds of different kinds and a few coarse Sedges. A free-growing shrub, which at a little distance might readily be mistaken for the graceful Tamarisk, is extensively propagated by cuttings inserted in the moist sand which fringes the salt water of the Canal, and is useful in fixing the shelving, sandy banks on either side. Other plants used for the same purpose are tall Reeds and coarse, mat-like tufts of Sedge; but none of the plants employed seem so effective as the Blue Shore Grass of our northern coasts. The prettiest of all the little station gardens to which previous allusion has been made is undoubtedly that at the old town and ferry of Kantara, through which large numbers of pilgrims pass every year on their way to or from Jerusalem. The boat was anchored here for the night, and a row of five Lombardy Poplars, fresh and verdant, served as a reminder of home, the illusion being heightened considerably by the cool breeze and the cheerful chirping of crickets innumerable all along the sandy banks. The station-houses, a little hotel, and other offices stand at different elevations on a group of sand-hills, and here, as so often happens in Europe, —where the wealth of tree beauty and greenery is so great—most of the picturesque beauty of the landscape is gained by the addition of that little row of tapering Poplars. That there is a depth and richness of moist soil here is shown by the extra luxuriance of the flowers and shrubs; here the Oleander—or " Rose of the Desert," as the Arabs term it—flourishes in all its glory of flower and fragrance. When I saw this shrub in Paris for the first time, I was astonished to find such a " thing of beauty," remembering that it is generally such a dusty, ill-favoured scapegrace as grown in our English gardens; but here again the plants were far superior in floriferous vigour to those of the Continent, forming fresh, leafy bushes 10 ft. or 15 ft. in height, every branch being terminated by an immense cluster—a natural bouquet, in fact—of rose, crimson, white, buff, or yellow flowers, as the case might be, rosy-crimson, salmon, and white kinds being, however, most noticeable, and all exhaling a fragrance almost equal to that from our own Rose gardens during June and July. The flowers, moreover, were nearly equal to those of Roses in size, shape, and colour. A little wood of these Oleanders grew at the base of the green, statuesque Poplars, Sunflowers, Zinnias, Celosias, an American Agave, a few dwarf Musas, and a tuft of Arundo Donax, all helping to form one of the brightest and prettiest little gardens I ever remember to have seen even in temperate climes. Here, in contrast with the barren sands, extending as far as the eye could reach on every side, it seemed a little paradise, and here, at least, it may be said that the desert has been made "to blossom as the Rose." No sooner had this little garden — this oasis in the desert been explored than I longed for an hour ashore at Port Said, considering that if such high culture were practicable in the arid desert, what must it not be at Port Said, by the blue Mediterranean? I had excellent opportunities of seeing the gardening and also the fruit and vegetable market at the last-named port; but on the coast, as further in the interior, I found gardening had to be carried out under difficulties, which nothing but the cheap and abundant Arab labour obtainable would have been able to overcome. Port Said is a small town standing on a shingly beach but a few feet above high-water mark, and behind the short street of low, airy, verandahed houses, low mud flats and sands extend far further than the eye can reach, these being tenanted by thousands of long-legged flamingoes and lazy vultures, the latter, aided by hordes of ill-fed, wolfish-looking curs, being, perhaps, the best of all scavengers in an eastern town. The population comprises representatives of all European nations and a large proportion of Arabs. Town gardening is represented by a small public garden—square would be a better name, only that this plot of half an acre or more is circular and laid out like a conventional Rose garden, having a dumb-waiter-shaped fountain in the middle of a central basin of fresh water, surrounded by curved beds, and intersected at right angles by shingle walks. On the rockwork at the base of the fountain Adiantum Capillus-Veneris, Tradescantia zebrina, Cyperus alternifolius and

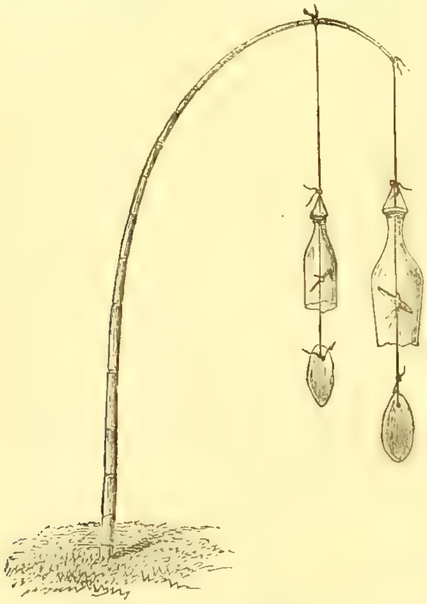


Vegetation by the Suez Canal.

other common stove plants seemed to enjoy the sun and moisture, the surrounding beds being filled with Acacias, that is to say, Robinias, Erythrinas, Poinsettias, Hibiscus Rosa-sinensis, Lantanas, Vincas, and Arundo Donax (one of the freshest and most beautiful of all fine-foliaged plants, and one which in this climate seems to enjoy perennial beauty), intermixed with Brugmansias, Marvel of Peru, and common annuals of various kinds. One of the best features in the gardens at Port Said is the abundance of fresh green creepers and climbing plants which tastefully drape the balconies and verandahs of the whitewashed houses, and trail in profusion over porticoes, old walls, and fences, in all directions. Among the plants so used Lantanas of various colours are conspicuous, together with Thunbergias, Cucurbits of various kinds, Passion-flowers, and Aristolochias, Jasmines, Tecoma jasminoides, Convolvuli, and a few straggling but floriferous scarlet Geraniums. F. W. B.

CHINESE SCARE-CROW.

This consists of a Bamboo firmly fixed in the ground, to the extremity of which are fastened pieces of cord. These are passed through bottles, the bottoms of which have been knocked out. To the end of each cord is attached some light material which the wind can easily blow about. The Chinese generally use part of a cuttle-fish for this purpose, but anything will do that will wind-wave, even a piece of slate or board. The bottles are fastened by their necks to the cords, and inside them, attached to the cord, is a nail or a small piece of iron, which, striking against the sides when the wind moves the apparatus, produces a singular kind of noise sufficiently loud to frighten birds. Care must be taken to prevent the bottles from striking against each other. When two or three are put on one stick, the cords should be of different lengths.



The Wild Flowers of New Zealand are neither numerous nor generally very beautiful. In the early spring festoons of Clematis indivisa hang on the shrubs in the skirts of the great forests, and warn the native gardener to prepare for the duties of the coming year. Then Sophora grandiflora, a shrub-tree, and almost the only one that sheds its leaves in winter, puts forth its clusters of large, papilionaceous blossoms, reminding the colonists by their yellow colour of the wild Daffodil of the early British spring. Dysoxylum spectabile, a tree whose leaves resemble those of the Lilac, its timber pencil cedar, and its fruit the Chestnut, now also hangs out its sprays of white bell-flowers from shoots proceeding from the bark of mature limbs, and not from the terminal branches. As the spring advances, Aristotelia racemosa, a shrub bearing a strong resemblance to the American blossoming Currant, is in bloom in the forest clearings. Towards Christmas the woods are in their glory; then the grand Rata (Metrosideros robusta) is suffused with a rosy blush by reason of its multitudinous crimson Myrtle-like blooms peeping out among its green leaves all over its great crown; the curious flowers of Astelia hang delicately out between the stout grassy leaves of Epiphytes, perched high up on the branches of the great trees; then both white and crimson Myrtle blooms hang from creepers running like the shrouds of a vessel up the trunks of the giants of the forest; then sweet-scented Dendrobiums hang pendent from many a stem, mingling their yellowish blossoms with silky and transparent fronds of Trichomanes and Hymenophyllum; then the native Screw Pine, bound like Ivy with a network of rootlets to some supporting stem, expands in the midst of its sedge-like leaves its curious spadices and its white, sugary spathaceous bracts, sought after by the natives and schoolboys as a delicacy; then, too, Weinmannia racemosa is gay with a profusion of racemes of white Veronica-like blossoms; then on the edges of precipices Rhabdothamnus Solandri displays its orange-coloured bells, and Knightia excelsa, a tree whose timber presents a curious interwoven appearance, bears its Honeysuckle blossoms. On the mountains at this season Ranunculus nivicola, a robust Buttercup, reminds the mountain shepherd of his native fields; and on the volcanic peaks, just beneath the snow-line, may now be found in full bloom dwarf Veronicas, Senecio elæagnifolius, Claytonia, Forstera, Gaultheria, Ozothamnus, and other interesting plants. On the sea cliffs to the north, Metrosideros tomentosa puts forth its really splendid cymes of crimson Myrtle blooms, and a beautiful crimson Veronica, with a large, dark green, glossy leaf, may be found in the same locality. There is a great dearth of herbaceous-flowering plants here; the Buttercup, a white Linum, Ourisia, a feeble Violet, and Daisy, with a small, pale Mesembryanthemum, being nearly all that we possess. Strangers, however, from almost every clime are stealing in upon and amidst the native plants. The purple Foxglove of Britain, and the white species from the Canaries, now grow by the sides of the forest roads, while Thistles, Hawkweeds, Daisies, and Buttercups are everywhere. In our gardens Agave americana is quite at home, variegated and other Yuccas send up pillars of Tulip-shaped blossoms, Camellias, 6 ft. or 7 ft. high, bear profusion of delicate blooms, Rhododendrons open their cups shedding rich fragrance around, while near to the sea Geraniums and Pelargoniums blossom all the winter; indeed, a bouquet may be gathered in North New Zealand any day in the year, both in the forests and in the gardens.—"Science Gossip."

Vegetation in Norway.—The climate of Norway is not so bad as might be supposed. The tepid waters of the Gulf Stream bathe its shores up to the North Cape; at Christiania, with a latitude like that of South Greenland, the mean temperature of the year is still 5° C. The length of the days during summer compensates to some extent the small elevation of the sun. Thus Norway can cultivate numerous fruit and forest trees; can produce Wheat up to the 64th degree of latitude (which is that of Hudson's Straits), Oats up to the 69th parallel, Rye still further, and Barley beyond the Polar circle. Some interesting peculiarities of Norwegian vegetation have lately been pointed out by M. Schubeleg. The precocity of the native gramineæ is remarkable, and the short duration of vegetation. The time for indigenous Wheat is about 90 days, 97 for Victorian Wheat, and 105 for Tuscany Wheat. In the most favourable years, crops of native Wheat, sown on May 4, have been reaped in fine condition on August 4, after only 74 days' vegetation, while in France 131 days are required. Seeds brought to a more southern country lose their precocity only after several generations; while seeds imported from the south give at first late harvests, but become acclimatized after three or four generations, reaching maturity at the same time with their congeners. Again, seeds from the south increase in weight and size, while seeds from Christiania, if sown at Breslau, produce much smaller seeds. The further north you go, the larger are the leaves of plants found to grow, as if from absorption of a larger amount of solar rays. And the aromatic principles of plants are remarkably developed in high latitudes. Celery, Horseradish, Garlic, and Parsley have a much stronger taste in the north.

The Double Cocoa-nut (Lodoicea Seychellarum) as a Medicine.—The kernel of the Sea Cocoa-nut is in great repute among the Arabs and Indians as a strengthening medicine; it is nearly 1 in. thick and very hard, having much the appearance of vegetable ivory; it has no odour or taste; when soaked in water it softens a little and can be split into thin fibrous bundles. Examined under the microscope, says the "Pharmaceutical Journal," these are seen to be composed of spindle-shaped cells having a central cavity, from which club-shaped canals extend to the cell wall, where they are opposed to similar canals belonging to a neighbouring cell. The Palm which produces this nut grows in the Seychelles, and the nuts are exported to India and Arabia. From the leaves very beautiful work-baskets, hats, bonnets, and many other fancy articles are made. A description of the Nut is unnecessary, as it is to be seen in most museums and cannot be mistaken for any other object.

AMERICAN NOTES.

Timber Screens for Orchards.—Mr. Barnard, of Pawnee County, Nebraska, said, at a horticultural meeting in that State, that a good timber screen would protect an orchard at a distance of a rod for every foot in height. It should be only on the side of prevailing winds. Mr. Budlong, of Franklin County, said that he formed his screens by planting two rows of White Willows 12 ft. apart; four rows of Cotton-wood, 16 ft. apart; and four rows of Black Walnut at the same distance. The remark was made that the efficiency of a screen depended much on the surface of the land; in one place it would afford ample protection, at another almost none.

Ripening of Peaches.—We observe a statement in several papers respecting the comparative ripening of the Amsden and Alexander Peaches, given by a western cultivator, in which the Alexander was a week or sooner in maturing than the Amsden. We have no doubt that the statement is correct, and that the difference mentioned really occurred in this instance; but pomologists are well aware that the results of single seasons and single localities cannot decide such questions. Only a few weeks ago we gave the times of the ripening of several Peaches this season in South Carolina, and amongst these examples a Tillotson ripened several days earlier than a Hale, although commonly a week or two later; and in another case Troth's Early Red and Serrate Early York matured with Hale, although the latter is usually greatly in advance. A Tillotson ripened on June 20, much earlier than the average. The Amsden and Alexander commonly ripen exactly together as an average in different places and years.

Co-operative Gardening.—Much may be done in an inexpensive way to promote friendliness and good feeling among neighbours, by the interchange of superfluous garden products. It is one of the disadvantages of the cultivator's isolated position, that each family, to secure a certain supply of vegetables and fruit, must grow a good many more than are absolutely needed. Cultivators are too busy to market the surplus, even if there were enough to make it worth their while. Hence a great deal of good produce goes to waste, while in the neighbourhood may be many families where the surplus would be sure of a welcome, and be repaid by exchange for something else. This year our first Cucumbers were fully two weeks earlier than our neighbours', and we have been able to make several presents of these and some other early vegetables. The same rule holds good with regard to fruit, berries, Grapes, garden seeds, &c. The surplus of most or all these articles is seldom saleable and never sold. What is given does not at all impoverish the giver, and nothing so easily done is more promotive of sociability and friendliness.

The Washington Pear.—We have cultivated this fine late summer Pear for nearly forty years. It possesses several valuable qualities. The tree is a handsome, although rather moderate grower. It succeeds well on heavy and light soils—on strong clay or light gravel. The tree comes early into bearing, and bears heavily. The fruit, although moderate in size, is a handsome clear yellow, finely ornamanted with large crimson dots on the sunny side. It is juicy, but not buttery in texture, and with a very sweet and excellent flavour. When the tree is overloaded, and the Pears small, they are not nearly so good as when fully grown and developed in a more moderate crop. Hence, occasionally, the importance of thinning. In this unfavourable year, the dozen trees of this sort on our grounds are bearing largely; and what is worthy of special note, none of them are attacked with the blight, while so many of nearly all other sorts are largely disfigured or destroyed by this disease.

Gas Tar Dangerous to Trees.—In Downing's "Fruit Trees of America" (p. 560 Appendix), is the following, to prevent mice or rabbits from girdling trees:—"The most effectual preventive is the coal tar made at the city gas works, laid on the lower part of the trunk from the ground to the height of 2 ft., with a common painter's brush. Experience has proved that it does no injury whatever to the tree, while it completely prevents, for that season, the attacks of mice, rabbits, and bark devourers of every kind. For young trees, dilute or thin the coal tar with one-half milk." Has any one ever tried the above to know from experience if it be entirely harmless to the tree? I have heard people say they considered tar of any kind injurious to fruit trees.—H. C. E. [We have known trees to be killed by tar, and it would be especially injurious to young and growing trees with tender bark. Common tar, applied to trees in winter with hard bark, becomes dry and hardened before growth commences in spring, and may prove harmless.]—"Country Gentleman."

Pine-apples are said to be selling at Key West at 9s. 6d. per hundred.

THE GARDEN OF BRITISH WILD FLOWERS.

The Marsh-Marigold (Caltha).—The Order of the Crowfoots having afforded us useful floating plants and a fine margin-plant, if we may use the term, it next gives us an attractive marsh plant for the neighbourhood of our water, the familiar Marsh Marigold or Water-Blobs (Caltha palustris), which, like a giant Buttercup, with the glossy leaves of the King-cup, gilds the meadows by our river-sides, as on the Thames at Kew and its tributaries—from the Churn on the Cotteswolds, and the Kennet at Reading, to the Colne in Hertfordshire, and the Mole and Medway in Kent and Surrey. It generally marks a rich peaty soil, but will grow anywhere. We should consider, however, if our gardens are to be truly natural and flourishing, the vast difference between the conditions under which a plant will grow and those under which it grows by choice and flourishes. The Marsh Marigold should not, therefore, be grown either actually in the water or in a border, but in such a bog as the Ragged Robin, the Cotton-grass, and the Bog-bean delight in. It is valuable as producing masses of a brilliant golden-yellow from March to May, and is thus specially suited to large grounds. There is a double variety, which has the advantage common to all such, the flowers lasting longer. This is a cultivated form of a rather uncommon wild variety (C. Guerangerii), with smaller flowers than the general form, so that it would be interesting if a double variety of this common, larger flower could be obtained. The species has a wide range in altitude and area, from sea-level to over 3000 ft., and from the Himalayas to North America. A variety known as Caltha radicans, now only found in a cultivated state, is worth notice, though of smaller habit. It roots at the stem-joints, and has very gracefully-pointed leaves, of a triangular heart-shaped outline.

The Marsh Marigold (Caltha palustris).

Double Marsh Marigold (Caltha Guerangerii, fl.-pl.).

The Globe-Flower (Trollius europæus).—An old-fashioned border favourite is the Globe-flower, well worthy of a place in any garden. It grows about 2 ft. high, with cut leaves and flowers of a clear, pale yellow, nearly 2 in. in diameter, and of that beautiful spherical outline to which the plant owes both its popular and scientific names. The blossoms are not only pretty, but also fragrant, and generally more or less double. It is not common as a British plant, only occurring northward of Derby, Worcester, and South Wales, and but very rarely in the north of Ireland. It is generally distributed over Northern and Central Europe, and must be reckoned among sub-Alpine plants, reaching as it does the altitude of 3300 ft. It flowers from June to August, and though happy in a border, grows by nature in moist upland pastures or copses. Its uncommonness renders it worthy of naturalization in any garden, but especially in the south, where it is not found wild. As colour-associates, Larkspurs and Columbines are among the most suitable for it; the contrast of their irregular outlines with its yellow spheres enhancing the effect. It should not be much massed.

The Globe-flower (Trollius europæus).

The Winter Aconite (Eranthis hyemalis).—It is hardly necessary to recommend so general a favourite as the Winter Aconite; its small, bright yellow flowers, opening even in January, and keeping up a succession till March, are very valuable as preceding the Crocus and Crowfoot Anemone on lawns, or banks or under trees, or copses. They contrast admirably with the glossy-fingered, leafy rosettes of bracts in which they nestle, and are best suited for spots similar to those dear to the Wood and Apennine Anemone, where they grow scattered like stars, here and there closer grouped as nebulæ. The Winter Aconite, though thoroughly naturalised in many parks and plantations (as at Wimbledon, at Oakley Park, Gloucestershire, and Lanyar Plantation, Nottingham), cannot be recognised as truly indigenous. It can be readily obtained from any nurseryman; its distribution is chiefly confined to the west of Europe, from Belgium southwards; it seldom exceeds 4 in. in height, and is propagated by division of the stout, creeping, underground stem or rhizome. It enjoys leaf-mould, and would look well under a spreading Beech or other isolated, deciduous tree.

The Winter Aconite (Eranthis hyemalis).

The Hellebores (Helleborus).—Though we have not the beauty of the Christmas Rose (Helleborus niger) among our wild flowers, the two British species of the genus are not to be despised for the shrubbery. The dark green of the quaintly-lobed leaves (whence the plants get their popular name of Bear's-foot) contrasting with the pale bracts, stalks, and flowers, a lurid, poisonous hue is over the whole. There is but little difference in appearance between the two species, the Green Hellebore (H. viridis) and the Stinking Hellebore (H. fœtidus); but, whilst the former is annual the latter is perennial, and the latter has the additional advantages of having more flowers on its stem and a dull purple blotch on its green sepals. It has been suggested that the curious pitcher-shaped nectaries which represent the petals may have an insectivorous function: to investigate this point may interest some owner of a wild shrubbery garden. These two species flower from February to April, and are often naturalised in woods, chiefly on chalk, in the south and east of England. Their Continental distribution is similar to that of the Winter Aconite. Near at hand these plants present a bushy habit, graceful branching, and the contrast of greens above-mentioned; whilst they are yet more valuable for their effect at a distance, which is the lighting up the lower part of a shrubbery's sombreness with the paler of the two greens.

The Stinking Hellebore (Helleborus fœtidus).

The Columbine (Aquilegia vulgaris).—Slight though the resemblance of their flowers may be either to pigeons' heads or eagles' claws, no one can dispute the mingled quaintness and grace of form, or the varied beauties of colour in the Columbines. They are all erect-growing, perennial herbs, with flowers at once recognisable from their symmetrical yet unusual form—five petal-like sepals alternating with the five spurred petals. Ranging in size from the little Alpine Columbine (Aquilegia alpina), under 1 ft. in height, to the commoner dimensions of from 1 ft. to 2 ft., and distributed throughout the north temperate zone, the five or six species which constitute this genus seem all to agree in liking light soils, sand, rock, or gravel, moist or readily permeable, and generally shady spots. They may be readily propagated by seed or division. The three best foreign species are the Alpine with blue, the Canadian (A. canadensis) with red or orange, and the Sky-blue (A. cœrulea), which is also North American, and has sometimes white flowers; but, though perhaps less rank in their growth, these should be supplementary to, rather than in lieu of our old-fashioned favourite, the common species (A. vulgaris). This last ranges from the Western Himalaya to Siberia, through Europe and to the Canaries, and occurs

The Columbine (Aquilegia vulgaris).

undoubtedly wild in many parts of Britain in shady thickets, though still more frequently as a naturalised escape. When truly wild it is generally single, and of a dull purplish-blue; but in gardens it is commonly white, blue, pink, salmon, flesh-colour, crimson, and maroon or brown, some of the tints being unusual among flowers. It owes much of its beauty, not only to the colour and form of the individual blossoms, which can only be appreciated on a near view or in cut flowers, but to their long drooping stalks over the clump of blue-grey, elegantly-lobed leaves. Personally I think it gains nothing in beauty by being doubled. It flowers freely from May to July, and will stand nearly any treatment, though it looks anything but happy when, as it too often is, scorched in the sun in a stiff clay or loam. I have seen it growing wild by paths in woods, or in the underwood on their outskirts, and even among the Furze in the Warren on Epsom Downs; but to make it thoroughly at home, without losing any of its graces, I should recommend its being placed with Broom bushes and Heather, Foxglove and Fern, shaded perchance by the Queen of the Woods (the Silver Birch), on the sandy or rocky bank of some rivulet or cascade—just such a spot, in fact, as that "Source of a River," which was one of the most refreshing oases in the weary waste of this year's Academy. G. S. Boulger.

Cressingham.

NOTES ON THE PLANT-LORE OF SHAKESPEARE.

Mr. Marsh's kindly criticisms on my papers demand some reply from me. I feel very much obliged to him for them, and thank him not only for the kind way in which he has noticed my work, but also for the many valuable corrections and additions which he has suggested; but on some of these I should like to make a few observations.

His remarks under Balm, Holy Thistle, and Primrose are merely corrections of printers' errors, which I note for correction. The following call for further notice:—

Apples.—I was aware of the passage in Cogan, and of the fact that Caraways were used as a relishing and corrective accompaniment with Apples. Besides the passages quoted, there is the following from a very interesting bill of fare of a dinner in 1626. It is from the account book of Sir Edward Dering, and may be found at length in "Notes and Queries," vol. i., p. 99—

"Carawaye and comfites, 6d.
A Warden py that the cooke made—we finding y^e^ Wardens, 2s. 4d."

In the second course—

"A cold Warden py."

And in the "complement"—

"Apples and Carrawayes,
Wardens bakt and cold."

But while I can have no doubt that there were Caraways which were not Apples, I still think it very probable that Shallow's "dish of Caraways" were the Apples so called. There is certainly no connection between the Caraway Apple and the Kerry Pippin. The Caraway Apple got its name from its supposed resemblance in taste to Caraways, and is a late-keeping Apple, while the Kerry Pippin is an Apple for the present month.

"Bitter Sweeting" is an omission, and I thank Mr. Marsh for pointing it out, as well as "Bachelor's Button," the quotation from the "Tempest" under "Palm," and from "Antony and Cleopatra" under "Rue."

Caraways.—I agree with Mr. Marsh that I ought to have given a separate clause to these, and have pointed out that they may be either the Apple or the Spice.

Cowslip.—As far as I am acquainted with the comments on "the crimson drops i' the bottom of a Cowslip," I can add nothing to them.

Cypress.—I quite agree with Mr. Marsh that my quotation, No. 2, should have been omitted.

Fig.—I am aware that the allusions in Nos. 5 to 11 are to the insulting gesture, "making the Fig," and that in that connection the reference is not exactly to the fruit named. Yet surely the expression must have originated in some connection with the fruit, and therefore these passages could not have been omitted.

Hyssop.—Mr. Marsh's quotation from Lilie's "Euphues" is a very happy illustration of Iago's speech, and I thank him for it.

Ivy.—Sheep occasionally feed on Ivy, but I cannot find that there is any plant specially called the "Sea Ivy." Ivy (Hedera Helix) grows luxuriantly on sea-cliffs, and I should suppose that both Shakespeare and Greene only refer to this.

Mustard.—I was in much doubt whether to admit this or not—and I decided against it. But further consideration convinces me that Mr. Marsh is right, and that an account which professes to deal with all Shakespeare's plants, must admit all vegetable products named by him. I must add therefore not only Mustard, but Mace, Sugar, Pepper, and Ginger—and this, with the editor's permission, I will do in a short paper by way of Appendix. I am inclined to think, from the passage in the "Taming of the Shrew," that Mustard was used in Shakespeare's time very much in the present fashion.

Palm Tree.—I omitted the passage in "Hamlet," as Mr. Marsh supposes, on Nares' authority; but I am not sure that I was right, and Nares speaks doubtfully. Perhaps it would be better to admit it with a note of explanation.

Quince.—My authority for connecting the Quince with Venus's Golden Apple was Rosenmuller's "Mineralogy and Botany of the Bible," and his authority is Philostratus' "Icones," i., 738, a work to which I have not at present access. I find the same in Phillips' "Pomarium Brittanicum," though he does not give his authorities:—"It is a fruit that the ancients held in high estimation; they considered it as the emblem of happiness, of love, and of fruitfulnes. It was dedicated to Venus, and the Temples of Cyprus and Paphos were decorated with it."

Rue.—Most certainly I did not mean to suggest an etymological alliance between Rue and Ruth; they come from quite distinct roots, but the words Rue (sorrow) and Ruta (the herb) being both in existence together, our ancestors joined them so far as to make the plant an emblem of the feeling. It was a verbal quibble not confined to Shakespeare. The passage from "Hamlet" will probably never be quite satisfactorily explained. I have little doubt that Ophelia uses the words "to wear with a difference" in the only sense in which, as far as I know, the words would then be used, *i.e.*, in an heraldic sense, and I have sometimes fancied that there may have been in the words a covert allusion to the Queen's husband not being the eldest brother, and so having to wear his "bearings" "with a difference."

Speargrass.—There is no doubt that the Achillea Ptarmica was called Nose-bleed by Lyte, Hollybush, Gerarde, Phillips, Cole, and others, both from Mr. Beisley's quotations and from Mr. Marsh's quotations from Professor Lindley and Skinner; but my contention is that this plant was never called Speargrass, and that some plant more resembling Grass must be sought for, and in such a doubtful question I proposed the Equisetum, which I still think has a good claim for the reasons I assigned. I need not say that Grass was a very generic term.

I feel sure that many readers of The Garden will, like myself, gladly welcome any further criticism from Mr. Marsh.

H. N. Ellacombe.

Deodars not Coning in Cornwall.—A Cedrus Deodara planted here in 1841, now thirty-six years old, probably forty from the seed-bed, standing in a sheltered situation about a mile from the shore of Mount's Bay, is well covered with male catkins, of which it has produced from two to three hundred annually for seven years consecutively, the only one of many here that has flowered at all. No appearance of the cones has, however, been observed. Is this due to the want of a drier climate, or is the Cedrus Deodara a diœcious tree? The Cedrus Libani is classed as a monœcious tree by Loudon, and I should suppose the Deodara must be the same. Cones of the Deodar have ripened and produced seedlings at Killerton, in Devonshire. My catkins have always appeared in August, and fall off in December.—J. J. Rogers, *Penrose, Helston.* [In the majority of cases the male catkins and the female flowers, according to Gordon, are produced on separate trees; but a considerable number of trees also produce both male and female flowers on the same tree.]

Branched Lilium auratum.—Dr. Wallace, of Colchester, possesses a form of this Lily which he calls "arboreum." It is an unusual-growing Lilium auratum which threw up a single stem from the ground for about 1 ft; this then branched out into five stems, each of which was well furnished with buds: forming a bushy head of blooms with a rounded contour. The general effect was very pleasing.

THE LIBRARY.

A BOOK ABOUT ROSES.

This is the sixth edition of "A Book About Roses: How to Grow and Show Them." By S. Reynolds Hole, Canon of Lincoln. All who care for sound and pleasant garden literature, as well as Roses, will be pleased to see so many and repeated evidences of the success of Canon Hole's book. Having more than once since its appearance noticed the book, we have now only to add that additions are made from time to time, bringing down Rose-knowledge to the date of issue, and that the present edition contains a coloured plate by the Hon. Mrs. Francklin. The following, among the appendices, will be useful to all interested in new Roses:—

The plan which I have advised the amateur to pursue in the formation of a Rose garden—that is, to buy his Rose trees from the nursery and then to multiply them upon stocks of his own—will be the best for its future continuance also. The best and the cheapest, because, although the foundation will be costly (that is to say, the site, the preparation of the ground, and the material), the superstructure and the maintenance of the fabric will not be expensive items. Once possessed of the most beautiful varieties of the Rose, and planting every November such a quantity of Briers, standard or seedling (or the Manetti, if that should prove the stock most suitable to his soil), as he may deem desirable, the independent Rosarian will grow his favourite flower to perfection, year after year, from his own resources, only requiring in addition those new Roses which promise to be of superior merit, which are regularly advertised by our English nurserymen in the spring, and may be had from them in the month of May. But how am I to know, the amateur will ask, what selection to make from the numerous varieties which are annually announced as "*superbes, ravissantes, magnifiques*"? You do not expect me to purchase some forty Rose trees at 3s. 6d. apiece, in total ignorance of their merits—if any? The gentle amateur, perhaps, in his guileless youth, has risen at some of these gaudy flies, and been painfully pricked by the hook. He flaps his tail in distrust, whenever he sees bright wings on the water, and swims off in search of safer food. It is quite true that a very large proportion of the glittering gems which are sent to us by the French jewellers turn out to be paste, and that some of the diamonds are "Rose" diamonds indeed—that is, not of the first water; but we must remember, at the same time, that there are always some real brilliants among them, and these the Rosarian who wishes for a perfect collection, and the exhibitor who would not be left behind in the race, must obtain at some risk, and at some apparent sacrifice. He cannot afford to wait a season, until a Rose is proved to be of superior excellence, but should have the happiness of knowing, when some novelty is applauded by all, that he purchased it in the preceding May, and that he will have half-a-dozen trees of it next year in his budding ground. These trees, and others of like excellence, will amply compensate for the disappointments around them, and, if he take only a pecuniary view, will repay him with interest for his outlay. I have therefore compiled, from reliable statistics, two tables for the information and direction of amateurs; the one designed to prove to him that Roses of superior merit have been sent out every spring during the last seventeen years, and the other giving the names of those who sent them. The first statement should encourage him to purchase, and the second should be some guide in his selection. He may reasonably expect that those Rosarians who have sent us excellent Roses will continue to do so, and seeing their names attached to the novelties in the spring lists of our nurserymen (these names are given in some catalogues and should be given in all), he will order with a good courage and with happy hopes.

I.

A List of the best Roses raised in France and elsewhere from the Year 1859 to 1877, A.D.

1859.
Hybrid Perpetuals.
Eugene Appert.
Gloire de Santhenay.
Louis XIV.
Madame Boll.
Madame Charles Crapelet.
Sénateur Vaisse.
Victor Verdier.
Bourbon.
Baron Gonella.
Tea.
Duc de Magenta.
Noisette.
America.
1860.
Hybrid Perpetuals.
Duc Decazes.
Madame Furtado.
Bourbon.
Catherine Guillot.
Modèle de Perfection.
1861.
Hybrid Perpetuals.
Alphonse Damaizin.
Charles Lefebvre.
Duc de Rohan.
François Lacharme.
Madame Boutin.
Madame Caillat.
Madame Charles Wood.
Madame Julie Daran.
Mme. Clém. Joigneaux.
Maréchal Vaillant.
Maurice Bernardin.
Olivier Delhomme.
Prince Camille de Rohan.
Souvenir de Comte Cavour.
Turenne.
Vicomte Vigier.
1862.
Alfred de Rougemont.
Baronne Adolphe de Rothschild.
Beauty of Waltham.
Jean Goujon.
John Hopper.
Laurent Descourt.
Le Rhone.
Prince Henri de Pays Bas.
Vainqueur de Goliath.
Bourbon.
Emotion.
Louis Margottin.
1863.
Hybrid Perpetuals.
Alpaide de Rotalier.
Centifolia rosea.
Joseph Fiala.
La Duchesse de Morny.
Leopold Premier.
Lord Macaulay.
Madame Victor Verdier.
Marie Beauman.
Pierre Notting.
1864.
Achille Gonod.
Belle Normande.
Dr. Andry.
Duchesse de Caylus.
Duke of Wellington.
Lord Herbert.
Madame Moreau.
Marguerite de St. Amand
Xavier Olibo.
Tea.
Maréchal Niel.
1865.
Hybrid Perpetuals.
Abel Grand.
Alba mutabilis.
Alfred Colomb.
Camille Bernardin.
Charles Rouillard.
Exposition de Brie.
Fisher Holmes.
Hippolyte Flandrin.
Jean Lambert.
Josephine Beauharnais.
Madame Fillion.
Mademoiselle Marguerite Dombrain.
Mlle. Marie Rady.
Marcella.
Prince de Porcia.
William Rollisson.
1866.
Hybrid Perpetuals.
Antoine Ducher.
Black Prince.
Charles Verdier.
Comtesse de Jaucourt.
Felix Genero.
Horace Vernet.
Madame Hausmann.
Madame George Paul.
Madame Thérèse Levet.
Mlle. Annie Wood.
Monsieur Noman.
Princess Mary of Cambridge.
Souvenir de Monsieur Boll.
Ville de Lyon.
Tea.
Madame Margottin.
1867.
Hybrid Perpetuals.
Baronne Hausmann.
Boule de Neige.
Christine Nilsson.
Clotilde Rolland.
Coquette des Alpes.
Duchesse d'Aoste.
Elie Morel.
François Fontaine.
La France.
Madame Cirodde.
Madame Noman.
Madame la Baronne de Rothschild.
Pitord.
Prince Humbert.
Reine du Midi.
Souvenir de Caillat.
Tea.
Clotilde.
Reine de Portugal.
1868.
Adolphe Brogniart.
Adrienne de Montebello.
Berthe Baron.
Charles Lee.
Clemence Raoux.
Duke of Edinburgh.
Devienne Lamy.
Dupuy Jamain.
Edward Morren.
Emilie Hausburg.
Henri Ledechaux.
Julie Touvais.
Madame Clert.
Madame Creyton.
Madame Jacquier.
Marquise de Montemart.
Miss Ingram.
Nardy Frères.
Perfection de Lyon.
Reine Blanche.
Souvenir de Poiteau.
Thyra Hammerich.
Victor de Bihan.
Tea.
Marie Ducher.
Montplaisir.
1869.
Abbé Giraudier.
Auguste Neumann.
Countess of Oxford.
Ferdinand de Lesseps.
General de Miladarovitsch.
Jules Chretien.
Jules Seurre.
La Motte Sanguine.
Louis Van Houtte.
Madame Liabaud.
Mlle. Eugenie Verdier.
Marquise de Castellane.
Paul Neron.
Tea.
Belle Lyonnaise.
Catherine Mermet.
Madame Berard.
Madame Levet.

1870.

In consequence of the war with Prussia, no new Roses were exported from Paris, and only some half-dozen from France. The best of these were—

Captain Lamuret	H. P.
Henri Pages	H. P.

The following were introduced by the English raisers:

Laxton.

Annie Laxton	H. P.
Princess Louise	H. P.
Prince of Wales	H. P.

Paul & Son.

Climbing Victor Verdier	H. P.

1871.
Abbé Bramerel.
André Dunand.
Auguste Rigotard.
Baron de Bonstetten.
Baronne Louise Uxkull.
Etienne Levet.
François Michelon.
Le Havre.
Lyonnais.
Madame Geo. Schwartz.
Madame Lefebvre Bernard.
President Thiers.
Richard Wallace.
Tea.
Madame Jules Margottin
Mme. Marie Van Houtte.
1872.
Bessie Johnson.
Cheshunt Hybrid.
Madame Lacharme.
Monsieur Claude Levet.
Monsieur Pierre Seletsky
Reynolds Hole.
Tea.
Perle de Lyon.
1873.
Captain Christy.
Etienne Dupuy.
Madame Nachary.
Marie Finger.
Pauline Talabot.
Souvenir de Spa.
Thomas Mills.
1874.
Comtesse de Serenye.
Hippolyte Jamain.
J. Stuart Mills.
Miss Hassard.
Monsieur E. Y. Teas.
Rev. J. B. Camm.
Royal Standard.
Star of Waltham.
Villaret de Joyeuse.
Wilson Saunders.
1875.
Duchesse de Valombrosa.
Duke of Connaught.
Empress of India.
Mrs. Baker.
Oxonian.
Sultan of Zanzibar.

1876.

The following is a selection from the Roses sent out by the French growers in the autumn of 1876, and by the English nurserymen in the spring of 1877:—

Hybrid Perpetuals.

Duchesse d'Ossuna (H. Jamain), very bright rosy vermilion, large, full, fine form; free perpetual; very vigorous.

John Fraser (Eug. Verdier), very dark crimson, large, very full, very fine form; vigorous.

Madame Berthe du Mesnil de Montchauveau (H. Jamain), beautiful silvery rose, brighter centre, very large, very full and free autumnal; very vigorous.

Madame Devert (Pernet), fine light rose edged with a row of flesh-coloured petals, very large, full, globular form; vigorous.

Madame la Baronne du Medem (E. Verdier), bright cherry-red, very large, very full, globular Aster-shaped flowers; vigorous.

Madame Sophie Fropot (Levet), bright rose, very large, full, fine Centifolia form; vigorous.

Madame William Wood (E. Verdier), deep rose, brighter centre, outer petals paler, medium in size, full, fine form; vigorous.

Madlle. Emma All (Liabaud), rosy-lake, brightened carmine, large, full, globular; vigorous.

Marie Louise Pernet (Pernet), very bright beautiful rose, clearer in centre; a seedling from Baroness Rothschild, very large, fine-cupped form; vigorous.

Marquise Adele de Murinais (Schwartz), pale silvery-rose, tinted with deep rose in opening, large, full, fine form; vigorous.

Marie Louise Margerand (Liabaud), very light rose with lilac reflection in the interior, very elegant globular form, large, very free autumnal; very vigorous.

Monsieur Fillion (Gonod), rose, with very bright centre, flower large, full, with larger outside petals; splendid; very vigorous.

Monsieur Gabriel Tournier (Levet), deep rose; very large, full, fine form; equal. First Prize at Lyons June Show. Vigorous.

Souvenir de Louis Van Houtte (E. Verdier), bright crimson-rose colour, dying off violet; very large, full, cup-shaped, with large petals sweetly scented; vigorous.

Hybrid China.

Souvenir du Pierre Dupuy (Levet), bright red, richly velveted; very large, very full, and of fine form, extra; very vigorous.

Tea-Scented.

Comtesse Riza du Parc (Schwartz), colour, china rose with coppery base; large, full, fine form, good habit, probably fine; vigorous.

Madlle. Lazarine Poizeau (Levet), deep orange-yellow, one of the small free-flowering button-hole Roses; moderate.

Souvenir de George Sands (Ducher), white with deep yellow centre; large, full, fine form; vigorous.

PART II.

An Alphabetical List of French and English Rosarians, who have sent out Roses of superior Merit from the Year 1859 to 1875, with the Names of the Roses and the Year of their introduction.

Beauman.

Marie Beauman, 1863

Boyan.

Madame Boll, 1859
Souvenir de Monsieur Boll, 1866

Campy.

Alpaide de Rotalier, 1863

Damaizin.

Abel Grand, 1865
Hippolyte Flandrin, 1865
Felix Genero, 1866
Reine Blanche, 1868
Jules Chrétien, 1869
Villaret de Joyeuse, 1874

Ducher.

Gloire de Santhenay, 1859
Antoine Ducher, 1866
Ville de Lyon, 1866
Nardy Frères, 1868
Perfection de Lyon, 1868
Marie Ducher (T.), 1868
Montplaisir (T.), 1868
Perle de Lyons (T.), 1872
Maria Theresa, 1873

Fontaine, pere.

Madame Charles Crapelet, 1859
Mademoiselle Marie Rady, 1865

Fontaine, Charles.

François Fontaine, 1867

Gantreau.

Camille Bernardin, 1865
Charles Lee, 1868
Souvenir de Spa, 1873

Gonod.

Achille Gonod, 1864
Madame Moreau, 1864
Madame Fillion, 1865
Madame Clert, 1868
Madame Creyton, 1868
Madame Liabaud, 1869

Granger.

Duke of Wellington, 1864
Exposition de Brie, 1865
Clemence Raoux, 1868
Edward Morren, 1868.

Guillot, pere.

Sénateur Vaisse, 1859
Baron Gonella (B.), 1859
Charles Verdier, 1866
Monsieur Noman, 1866
Madame Noman, 1867
Victor de Bihan, 1868
Countess of Oxford, 1869

Guillot, fils.

Le Rhone, 1862
Josephine Beauharnais, 1865
Horace Vernet, 1866
Madame Margottin (T.), 1866
La France, 1867
Reine de Portugal (T.), 1867
Madame Jacquier, 1868
Catherine Mermet (T.), 1869
Mademoiselle Eugenie Verdier, 1869
Abbé Bramerel, 1871
Baronne Louise Uxkull, 1871

Jamain.

Madame Boutin, 1861
Dupuy Jamain, 1868

Lacharme.

Virginal, 1858
Victor Verdier, 1859
Charles Lefebvre, 1861
Baronne Adolphe de Rothschild, 1862
Xavier Olibo, 1864
Alfred Colomb, 1865
Pitord, 1867
Louis Van Houtte, 1869
Lyonnais, 1871
President Thiers, 1871
Madame Lacharme, 1872
Captain Christy, 1873
Marie Finger, 1873
Comtesse de Serenye, 1874
Hippolyte Jamain, 1874

Laxton.

Annie Laxton, 1869
Princess Louise, 1869
Prince of Wales, 1869
Empress of India, 1874
Mrs. Laxton, 1875

Lecomte.

Maréchal Vaillant, 1861

Leroy, Andre.

Celine Forestier (N.), 1858

Levet.

Madame Thérèse Levet, 1866
Abbé Giraudier, 1869
Belle Lyonnaise (T.), 1869
Madame Levet (T.), 1869
Paul Neron, 1869
François Michelon, 1871
Mons. Etienne Levet, 1871
Madame Lefebvre Bernard, 1871
Mons. Claude Levet, 1872
Mons. Pierre Seletski, 1872
Mons. Etienne Dupuy, 1873

Leveque et fils.

Duc de Rohan, 1861
Baronne Hausmann, 1867
Emilie Hausberg, 1868
Devienne Lamy, 1868
General de Milaradovitsch, 1869
Richard Wallace, 1871
Madame Louis Leveque, 1872

Liabaud.

Madame Clémence Joigneaux, 1861
Laurent Descourt, 1862
Marcella, 1865
Elie Morel, 1867
Marquise de Montemart, 1868
Jules Seurre, 1869
Baron de Bonstetten, 1871

Margottin.

Jean Goujon, 1862
Louis Margottin (B.), 1862
Bernard Pallissy, 1863
Prince Humbert, 1867
Adolphe Brogniart, 1868
Adrien de Montebello, 1868
Leopold II., 1868
Souvenir de Poiteau, 1868

Paul & Son.

Lord Clyde, 1863
Princess Mary of Cambridge, 1866
Duke of Edinburgh, 1868
Cheshunt Hybrid (T.), 1872
Reynolds Hole, 1872
Wilson Saunders, 1874
Duke of Connaught, 1875
Sultan of Zanzibar, 1875

Paul, William.

Beauty of Waltham, 1862
Lord Macaulay, 1863
Lord Herbert, 1864
Black Prince, 1866
Star of Waltham, 1875

Pernet.

Vainqueur de Goliath, 1862
Madame la Baronne de Rothschild, 1867
Marquise de Castellane, 1869
Souvenir de General Douai, 1871

Portemer.

Pierre Notting, 1863

Rigotard, Auguste.

Duchesse de Valombrosa, 1875.

Robert et Moreau.

Souvenir de Charles Montault, 1862

Rolland.

Clotilde Rolland, 1867
Reine du Midi, 1867
Clotilde (T.) 1867

Sansal.

Marguerite de St. Amand, 1864

Schwartz.

Madame George Schwartz, 1871

Soupert et Notting.

Prince Henri de Pays Bas, 1862

Touvais.

Centifolia rosea, 1863
Julie Touvais, 1868

Turner.

Miss Ingram, 1868
Lord Napier, 1869
J. Stuart Mill, 1874
Rev. J. B. Camm, 1874
Miss Hassard, 1874
Royal Standard, 1874
Oxonian, 1875
Mrs. Baker, 1875

Vanasche.

Leopold Premier, 1863

Verdier, Charles.

Madame Cirodde, 1867

Verdier, Eugene.

Madame Caillat, 1861
Madame Charles Wood, 1861
Prince Camille de Rohan, 1861
Joseph Fiala, 1863
La Duchesse de Morny, 1863
Madame Victor Verdier, 1863
Dr. Andry, 1864
Maréchal Niel (T.), 1864
Alba mutabilis, 1865
Charles Rouillard, 1865
Fisher Holmes, 1865
Jean Lambert, 1865
Mademoiselle Marguerite Dombrain, 1865
Prince de Porcia, 1865
William Rollisson, 1865
Madame George Paul, 1866
Madame Hausmann, 1866
Mademoiselle Annie Wood, 1866
Souvenir de Caillat, 1867
Auguste Neumann, 1869
Ferdinand de Lesseps, 1869
Thomas Mills, 1873
Pauline Talabot, 1873
Monsieur E. Y. Teas, 1874

Verdier, Victor.

Madame Furtado, 186)
François Lacharme, 1861
Olivier Delhomme, 1861
Vicomte Vigier, 1861
Henri Ledechaux, 1868
Thyra Hammerich, 1868

Vierllard, Baron.

Berthe Baron, 1863

Ward.

John Hopper, 1862

Death of Professor Parlatore.—The death of Filippo Parlatore, Professor of Botany at Florence, is announced. He died full of honours on the 9th of this month at the age of sixty-one. He was well known in connection with his writings on Conifers.

Japanese Wistarias.—Among climbers, the Japanese Wistarias are very beautiful. One variety produces racemes from 2 ft. to 3 ft. long; another has pure white flowers; one has racemes of double flowers resembling small roses, and another has deep green, very glossy foliage freckled or spotted with gold-coloured spots. We saw something of these beautiful Wistarias when in America, but should like to see some evidence of their being made known through our nurserymen. If we mistake not, Mr. Hogg was instrumental in introducing them to America.

WATERCRESSES AT SPRINGHEAD.

Watercresses are said to have grown in a wild state on the banks of the Thames and other places near London for many years before their culture for market was attempted on anything like an extensive scale, and there being then little demand for them the supplies from these quarters were sufficient; but as Watercresses gained popularity in France, Prussia, and elsewhere, so the demand for them in London also increased, and beds for their culture were formed at Springhead and Northfleet, near Gravesend, as far back as the beginning of the present century. What quantity of Watercresses is now consumed in the Metropolis it is impossible to tell, but Mr. Horace Mayhew calculated that 14,958,000 bunches were sold in the course of 1851. Of this amount the street hawkers alone disposed of £13,949 worth. On an average they disposed of 5s. 6d. worth per week each, on which the profit was about 3s. 6d. This estimate of the Cress trade in London does not, of course, take into account the amount brought in directly from the country and disposed of in other ways. As the population of London has so vastly multiplied of late years, the amount now consumed must be much greater, and is daily on the increase, as people are beginning to learn the true value of this wholesome salad; and although this, as just stated, was early in the present century, the Cresses grown at Springhead are still noted for their superior quality. After these beds were started, and the produce obtained from them was found to yield remunerative profits, similar places were soon made where suitable situations existed round the Metropolis, and it is estimated that there are no less than 10,000 bunches of Watercresses disposed of in London daily. Large supplies are now obtained from Waltham, Cheshunt, Uxbridge, and other low-lying places near the Great Eastern Railway, and the annual amount realized by growers for London alone is estimated at over £ 000. The space at Springhead allotted to Watercress culture is about three acres in extent, and consists of a winding ditch varying in width from 6 ft. to 20 ft. The supply of water is furnished by numberless springs of fresh clear water, which bubble out near the banks of the stream in various places and form themselves into a little rivulet. The water contains a good deal of iron, and on the sides of the Cress-beds, where it is somewhat stagnant, the Cress assumes a much more unhealthy colour than that in the middle of the stream. The Cress-beds at Springhead lie in a warm sheltered valley; the sloping banks on either side the stream, and which appear to be exceedingly fertile, are covered with fruit trees, such as Apples, Plums, &c., of which there seems this year to be in this locality a much better crop than we have found elsewhere; and Lettuces thrive exceedingly well near the water. The Watercress is re-planted yearly, generally in August and September, and sometimes in spring. Tufts of the roots are taken up and pulled apart, and planted in rows about 1 ft. apart, after which they are trodden or rolled down, with a view to induce the roots to take quickly. The water is just deep enough to cover the roots, and when fully grown the young shoots in summer represent a miniature meadow of healthy green Watercresses. Cutting is practised three times a week, as many being cut at a time as the markets require. Cutting the Cress is performed by men who, with leather boots to knee, walk in the beds, and with a long knife chop off the most forward of the Cress about 9 in. long, and place it in baskets in such a manner as to allow of a circulation of air through the baskets, in order to prevent the Cress fermenting. Before being placed in the baskets the Cress as cut is dipped overhead in the water, which keeps it fresh until it gets to London, when the purchaser afterwards keeps it well wetted as long as it remains in his possession.

Apart from the interest of the Watercress beds at Springhead, the grounds attached are well worth a visit. One of the largest Weeping Willows in England is here to be seen. Its trunk is about 20 ft. in circumference and from 10 ft. to 12 ft. high, from which issue several sturdy limbs, which have some time been cut back, and are partly severed by their weight from the trunk, and are consequently upheld by iron posts. The head of the tree is of considerable height, and covers a large space of ground with its gracefully drooping glossy-green spray. Amongst other attractive objects are Ivy-covered bowers, old sheds clad with the double golden-flowered Kerria japonica pl. pl., and rare specimens of the large glossy-leaved Catalpa, which, as well as the Willow alluded to, appear to derive great benefit from the stream of water which runs close by. Monthly Roses are plentifully planted between annuals of various kinds, Sunflowers and bright-coloured Pelargoniums all growing in a natural and therefore pleasing manner. A large sloping bed, facing a residence overhung with Clematis, Roses, and Wistarias, was very attractive. It was occupied by common hardy Fuchsias of various kinds, all of which were bowed down to the ground by their masses of red and purple blossoms. A few scarlet Gladioli and other brightly-coloured flowers added to the effect, which was charming. Indeed, all gardening at Springhead appears to be done in a natural half wild manner. This, it must be admitted, is much more enjoyable than formal parterres of flower-beds and borders ever can be. S.

Cryptogamic Society of Scotland.—The days of meeting of the third annual conference will be Oct. 17th, 18th, and 19th, instead of the 10th, 11th, and 12th of that month, as formerly intimated.

Royal Caledonian Horticultural Society.—This Society has decided to hold its next spring exhibition in the new Vegetable Market, Edinburgh, and it is proposed to make the show a two days' one. An extra effect will be made to render the removal of the show on this occasion from the always too crowded music hall a decided success.

Eighth General Meeting of German Pomologists. — This will be held at Potsdam in the first week of October, on the occasion of the great fruit show which is to take place there, commencing on the third of the month. The large Orangery at Sanssouci has been lent by the Emperor for the purpose of this display, which is expected to be of unusual extent and splendour. Visits to the Royal Gardens, to Babelsberg, Glienecke, Werder, and other places of interest are in course of arrangement for the amusement of intending visitors.

NOTES AND QUESTIONS—VARIOUS.

Beech Tree Caterpillars.—I have sent some caterpillars which I caught upon a Beech tree, where there are hundreds now stripping the leaves rapidly off the bunches. Would you kindly name them, as I have never seen such caterpillars before?—W. M'A. [Pygæra bucephala—also known under the English name of the Buff-tip moth.—A. M.]

Milla biflora (see p. 199).—I had several bulbs of this in bloom last year, and I think it a mistake to say that it has been "long lost." It is a beautiful plant, quite in advance of its congener, Triteleia uniflora, but much more difficult to manage, and much scarcer. I find that the bulbs often lie dormant like some of the small Narcissi, but once get them to grow and they will bloom.—A. Rawson, *Bromley Common.*

Koelreuteria japonica has been long introduced into our gardens, but is not nearly as well known as it should be. It grows from 20 ft. to 30 ft. high, has yellowish-green foliage, and produces spikes of yellow flowers in July. This tree is particularly desirable on account of its unique appearance, and its producing flowers when other trees and shrubs have passed out of bloom. I find the above in "Harper's Bazaar." May I ask if the tree is in cultivation with us? —H. P.

Propagating Wallflowers.—I am now putting in cuttings of some selected dark and yellow Wallflowers. If put into some good light sandy soil, as one would those of Pansies and such like, they strike quickly and make good plants for blooming in spring. Amongst Wallflowers it will always be found that some are finer than others—of a dwarf bushy growth, and with large, well-formed flowers of good quality. The best strain of seed may not ensure kinds so good as these, therefore the expediency of using cuttings. The pretty dwarf Belvoir Castle Yellow is best kept propagated in this way in order to preserve the correct type.—D.

Diseased Violet Leaves.—The specimens of diseased Violet leaves enclosed are from plants grown on a border specially prepared for them. Last year we lost all our Violets in a similar manner. How can we avoid such a mishap in future?—W. C. B., *Clapham Park.* [The leaves in question are attacked by a fungus which is most troublesome in the case of the V. alba odorata section, especially the white wood and hedge-row Violet, and the old double white, and, indeed, most of the varieties that have leaves of that character—Belle de Châtenay not excepted; but it is rarely seen on any of the strong-growing varieties, such as the Czar, Giant, and Victoria Regina—just a spot or so might be seen occasionally, communicated no doubt from the others, but the disease if neglected spreads most rapidly on the first-named varieties. There are two methods of keeping it in check, viz., dipping the finger and thumb in flowers of sulphur and pressing the spots between them, and picking the affected leaves off. Possibly, if very bad, the whole of the leaves might be cut off and a good dressing of fresh soot applied.—George Lee, *Clivedon.*]

No. 303.] SATURDAY, SEPTEMBER 29, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

WOMEN AS GARDENERS.

Miss Frances Power Cobbe has something to say on this subject not without interest. The subject of gardening, writes Miss Cobbe in the "Women's Gazette," as a remunerative employment for women, to which I ventured recently to call the attention of your readers, has been in the interval treated as follows in a weekly newspaper:—

"Women love flowers, and it is very good for them to love them; and flowers thrive under their care in a way so mysterious as to suggest that, like dogs or birds, they have a certain sensitive-plant sort of satisfaction in being touched by gentle hands, and visited by somebody who will

Out of the cups of the heavy flowers
Empty the rain of the thunder showers,

These things being so, why or how does it happen that women so very rarely undertake gardening as a remunerative employment? and while we find a 'Poor Gentleman' writing condescendingly to the 'Times' that he would not 'object' to take a head-gardener's place, we never hear of a lady-help seeking any such post, though hundreds are already qualified by their skill and experience to undertake it? We will not waste time by lamenting that sheep will follow in beaten tracks, and that the sheep-dogs too often bark at them when they attempt to nibble alongside new ones, but proceed at once to explain how we think the charmed circle of the employments of women may be broken in this direction without too much violence, and ladies encouraged to turn their thimbles into trowels and their needles into pruning-hooks. First, for that very considerable class of ladies who possess a small fixed income, and who have been brought up in the country in the enjoyment and care of a garden—say, the daughters of clergymen, or country doctors, or squires, with estates not big enough to make their head-gardener an authority much too awful to be meddled with by the ladies of the family. When such a lady—say at the age of thirty-five or forty-five—finds herself, as widow or old maid, deprived of her home by the death of her parents or husband, and without any immediate objects in life, she commonly either takes to wandering about incessantly abroad, or settles down in an English watering-place, eking out her small pittance by contrivances, like those of the good ladies of 'Crauford,' and doing such kind turns as her slender means will admit; attending innumerable tea-parties, till she gradually withers in a harmless old age. Why should not such a lady invest her little competence in the lease of a cottage with a good large garden, in whatever locality her connexions may reside, and set about at once rendering this garden profitable by the sale of flowers in the first place, and then, perhaps, of fruit and choice vegetables? We are assuming that she already has thoroughly learned at home the art and knack of cultivating flowers, and that she is physically strong enough to do the lighter part of garden work every day, and to find it healthful and delightful. What she will need, then, will be, once in a way, the work of a labourer for a day or two to dig and manure her ground, and afterwards the help of a boy whom she will train and employ generally as her servant. With one or two such boys working under her eye and along with her, and with a frame or two in which to keep her choice plants in winter, our 'gardeness,' if she know her business, would be able to produce a constant succession of fine nosegays during the greater part of the year. It would scarcely ever be necessary for our lady gardener to advertise her willingness to supply flowers, to obtain among her friends and connections abundant contracts; but if she still had an overplus, a notice in the newspapers would bring her, if we mistake not, more orders than she could meet. In the sales so effected there would be nothing in the slightest degree derogatory to any lady in the land, any more than there is to the greatest nobleman who sells his corn and farm produce."

To these remarks I would add the suggestion, that when her little establishment is in full working order, our lady market-gardener might invite one or more other ladies to board and share her work, who will thus study practical gardening as a profession, and fit themselves to undertake the posts of head gardeners in country seats where a few under gardeners are employed. Some prejudices would need to be overcome in this case, but such situations if procured would be quite as pleasant and profitable, I imagine, to any lady qualified to hold them, as that of elementary village schoolmistress, for which so many are now wisely preparing themselves in that admirable institution, Bishop Otter's College. Very soon I feel sure the owners of handsome gardens in search of head gardeners would learn to seek eagerly for a woman, who would lay out their walks and beds, and group their flowers, with the taste and originality of a lady, instead of in the *banale* professional style of a regular head gardener, and who might not think it necessary to oppress the ladies of the family when they venture to gather their own flowers and fruit after the manner usual among such dignitaries. Flower-beds, laid out by one of these officials by rote and rule, bear to a true garden (such as Lady Corisande's in "Lothair") the relation which a gaudy drawing-room, all mirrors and ormolu, furnished to order by a common upholsterer, bears to a room wherein a true woman has dwelt for years, surrounding herself with beautiful and harmonious things, till the very aspect of her chamber reveals something of her soul.

[No doubt we shall have what Miss Cobbe desires when the simplest useful work is honoured and the most ornamental idleness thought meanly of; as yet, that is a long way off. She does not know how much has to be learnt to make a good gardener now-a-days. But there is one thing that women might do at once without apprenticeship—cease to patronise the kind of gardening to which she so very properly objects. In the majority of cases this was forced on gardeners at first by ladies who could see no better way of illustrating in their gardens the beauty and variety of the vegetable world. Nothing is more certain than that the system was at first adopted with regret by many good gardeners. Now, unhappily, we have a school brought up under the influence only of "bedding stuff," as they very properly call it, and who can see little or nothing beyond it. Gardening is certainly charming work for women if the piano and the starched slavery of dress will ever allow them enough liberty to pursue it well.—Ed.]

HYPERICUM PATULUM AT COMELY BANK.

By chance, the day after I had read the article in The Garden on the genus Hypericum, and studied the excellent plate of H. patulum (given at p. 280), I happened to take a stroll through the old-fashioned and out-of-the-way nurseries of Messrs. Cunninghame & Fraser, which lie near the new Fettes College, Edinburgh. I found there one large bush with glossy evergreen leaves, and bearing attractive yellow flowers which, upon nearer inspection, turned out to be a Hypericum, which Mr. Fraser told me, upon my taking it to him, was H. patulum. There was just one bush of it, and he did not know how long he had had it. The flowers resemble the plate in The Garden very closely, the only differences being that the ovaries in the plant which I saw were not so green as those in the illustration, partaking more of the yellow hue of the flower, and the flowers were not expanded in clusters, but singly or in twos; it certainly is a very beautiful plant, if not the most beautiful of the St. John's-worts. The leaves and flowers are of great substance and of a beautiful glossy texture. Its hardiness is undoubted, as here it has stood in the climate of Edinburgh for an unknown number of winters. These gardens are a real paradise to the collector of hardy plants and shrubs. There is no signboard bearing the name of the firm, they do not advertise, nor is there any printed catalogue, and nearly the whole extensive grounds are a wilderness of old-fashioned flowers and shrubs. Here I found a bed of the rare Narcissus triandrus, another of N. montanus, and one of N. bicolor, besides many other rare sorts. Large Magnolias thrust sturdy arms out from the old grey walls mixed with Jasmines, Siliquastrum, and rare Spiræas. There is also a large collection of Alpine plants. An air of repose and old-worldliness rests over the whole nurseries, which amply repay a visit, were it only to find a contrast with the vigorous, pushing manner in which trade is usually carried on.

SALMONICEPS.

A GARDEN OF HARDY EXOTIC FERNS.

CLOSE to Musselburgh, beautifully situated amid fine pleasure grounds and stately trees, stands Pinkie House, the residence of Sir Archibald Hope, of Craighall. It consists of two sides of a quadrangle, with central tower, which dates as far back as James III.'s time; the rest of the mansion is of James VI.'s time, and is considered to be one of the finest specimens of the Scottish manor of that age. The Battle of Pinkie was fought in 1547 within the pleasure grounds; and here also Prince Charles Edward slept the night previous to the Battle of Prestonpans. It is not, however, the history of Pinkie that I am about to write—though that would doubtless be interesting—but to record the fact that within the grounds is to be seen the best private collection of British and hardy exotic Ferns in Scotland. It consists of upwards of 400 species and varieties, all planted out on what may be termed a rockery, which is situated on the south of the flower garden, and within view of the mansion, under the shade of tall trees. Prominent specimens of evergreen shrubs afford shelter from cutting winds to the stately and delicate Ferns, which are placed as it were under their protection. The rockery, taken as a whole, is of an undulating character, nowhere rising over 6 ft. or 7 ft. above the gravel walks on either side, but frequently pierced with narrow paths, which terminate in rounded nooks and corners, and hidden caves suitable to the requirements of Hymenophyllum, Asplenium marinum, &c. Not unfrequently one has to ascend by winding, narrow, stone steps to the ridge, and then descend to another cave or rounded hollow, the steps being in that case entirely hidden with the delicate, recurving fronds of Athyriums, such as A. Filix-fœmina cristatum, plumosum, and all the other forms into which A. Filix-fœmina has differentiated. Advantage has been taken to vary the aspect by means of such plants as Dracæna indivisa, Aralia Sieboldi, Phormium tenax, Aspidistra lurida variegata, and Arundo Donax, all of which are to be found quite hardy. Arundinaria falcata, which flowered last year, is dead; but self-sown seedlings are springing up everywhere, which, together with Bocconia cordata 9 ft. high, and Cow Parsnips 15 ft. high, form prominent objects here and there, the whole forming a beautiful background to the flower garden.

The collecting and arranging of this extensive collection has been the work of a number of years, and is wholly due to the persevering industry of Mr. H. Kingscote, Lady Hope's father, and to the care which her ladyship takes of all the plants. Mr. Kingscote is in Scotland only one or two months in the year, but he is, nevertheless, constantly adding to the collection, and he takes much pleasure in relating to any one interested the circumstances under which each plant was collected or got. He is particularly fond of Polypodiums, of which he has upwards of thirty specimens and varieties, and these are not in single patches, but by the dozen: amongst them are P. vulgare cambricum, 3 ft. across; P. v. omnilacerum, nearly as large; and P. v. cristatum in large patches round all the rockery. Prominent amongst the Polypodiums are the following varieties:—P. auratum, with golden yellow fronds, with the apex bifid or multifid; P. Cornubiense elegantissimum, with finely sub-divided lobes, giving the plant the appearance of the Parsley Fern; P. multifidum cristatum, finely crested; P. pulcherrimum, with imbricate fine broad pinnæ; P. omnilacerum angustifolium, with pretty narrow fertile fronds; P. dissimile, with fine large fronds; P. Whytei, one of the finest and most distinct, highly subdivided; while P. alpestre and its variety P. flexile were here larger than we usually find them, being at least 3 ft. through. Of Aspleniums, there are here upwards of forty; A. septentrionale and A. germanicum, rarely to be seen in good condition, are quite at home; of A. fontanum the only variety is lanceolatum. Adiantum nigrum is represented by four or five varieties, the most distinct being acutum and subconfluens; of A. Trichomanes the most distinct are Moulii and cristatum, with the apex of the fronds highly subdivided and crested; A. viride, one variety got on Ben Lawers, was pretty and distinct. Of Athyrium, there are nearly 100 varieties, more or less distinct; but all who know (and who do not?) the Lady Fern, "supreme in her beauty," will not be surprised when I say that some of the varieties are anything but beautiful, speaking comparatively. Cystopteris montana is doing well; of others, C. Dickiana is the neatest; numerous varieties collected in various places are here in quantity. Of Lastrea Filix-mas there are nearly endless varieties, the most distinct being cristata, angustata, and Barnesi: and of L. dilatata the finest is lepidota and Hopeæ—a very distinct and beautiful variety found by Mr. Kingscote near the Pass of Killiecrankie, and named in honour of Lady Hope. Polystichum is represented by no fewer than seventy-two species and varieties, and they are altogether a splendid lot. From P. angulare are got the greatest numbers of varieties, and between some of these, such as P. grandidens minus and the tall and stately forms of P. aculeatum and its varieties there is every conceivable shape. A seedling found in the woods of Kingscote, in Gloucester, and named Kingscoti, is a fine variety, 3 ft. to 4 ft. high, the dark green fronds being of a rigid, upright habit; it will make a useful pot plant; it is further remarkable in being viviparous in the axils of the higher pinnæ. There are also some distinct species; P. Lonchitis, one of them, from self-sown spores on the rockery, is very remarkable for the length of its fronds, which are quite 18 in. high. Scolopendriums are numerous, there being fifty named varieties of S. vulgare, besides endless sub-varieties, raised from spores; plants of S. crispum, 4 ft. across; one like Endiviæfolium was in fine condition; ramose and crested forms are endless. Woodsia ilvensis and W. hyperborea were growing satisfactorily. In the list of hardy exotics the chief interest will be the number of species which are found to be hardy, and which have hitherto been only met with in the stove or warm greenhouse.

Adiantum Capillus-Veneris
,, ,, subrotundatum
,, pedatum
,, venustum, very large
Asplenium Thelypterioides
,, Michauxi
,, strigulosum
Athyrium Goringianum pictum, five years out
Cystopteris bulbifera
Lastrea opaca, strong
,, Goldieana, very fine
,, Standishi
,, erosa
,, atroviridis
,, erythrosora
,, atrata, strong
Lomaria chilensis, fine, healthy
,, alpina
,, fluviatilis, strong
,, Boryana, fine large plant
,, crenulata, growing everywhere
,, nuda
,, antarctica
Onoclea sensibilis
,, sp. from Bermuda
Osmunda cinnamomea
,, interrupta
,, spectabilis
Platyloma rotundifolia
Polypodium hexagonopterum
Onychium japonicum, doing finely
Dictyogramma japonica
Polystichum pteridifolium
,, vestitum venustum, fine
,, sp. small, from New Zealand
,, acrostichoides
,, proliferum, New Zealand
Pteris scaberula
,, hastata
Polypodium coriaceum, fine plant
Struthiopteris germanica
,, pennsylvanica
Woodwardia radicans
,, areolata
Sitolobium punctilobum

And perhaps some others which may have been missed; the above were on the whole doing well. A number of others not mentioned were planted out this year.

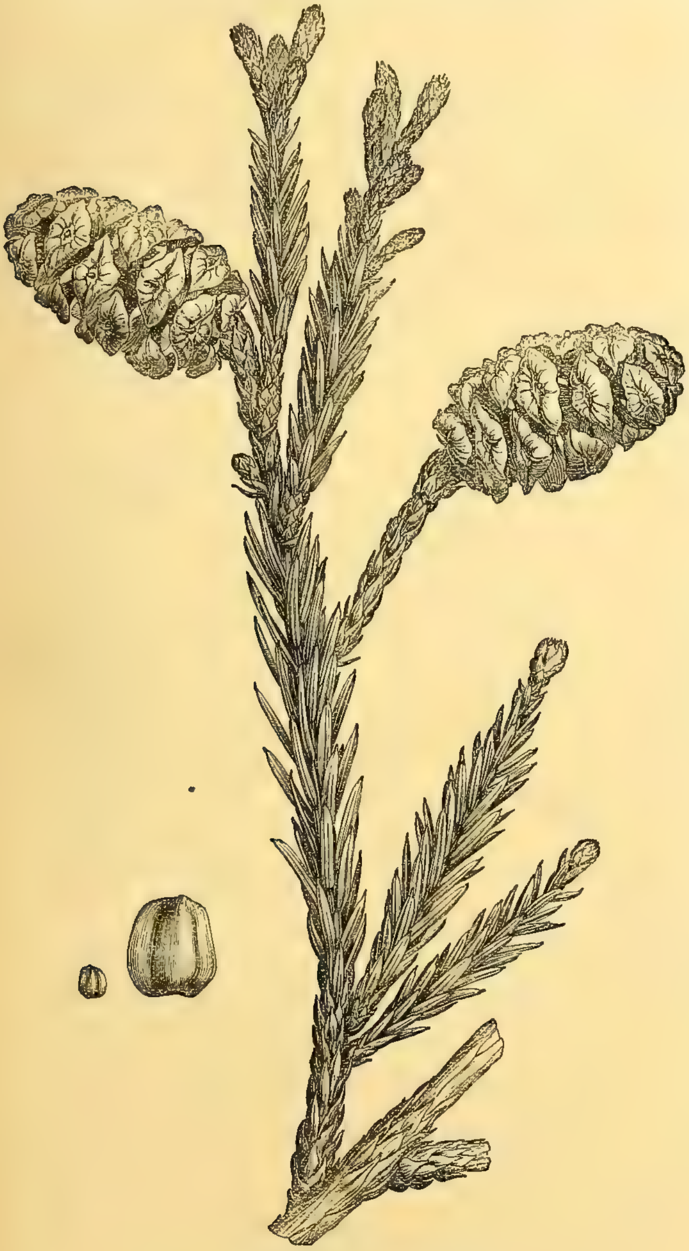
R. M.

Black and White Mints.—Dr. Piesse, in one of his very interesting papers now appearing in THE GARDEN, carefully and accurately describes the two kinds of Mint so largely cultivated and distilled by Piesse and Lubin at Mitcham. Though the figures engraved in THE GARDEN of the Black and White Mints give a good idea of their distinctness, I may perhaps be allowed to add my testimony to their totally different appearance as a field crop. By the kindness of, and in company with Dr. Piesse, I visited his fields and still-house a few years since, and secured specimens of both these Mints. Upon submitting them to Mr. J. G. Baker, he gave me his opinion upon them, with which that of Dr. Boswell entirely agrees. These specimens are now in the Kew Museum, and in their dried state even the difference in appearance is very marked, the leaves of the Black Mint being of a much darker green, and the stalks of a deeper purple than the White. The two kinds are very well described in the first part of Bentley and Trimens' "Medicinal Plants," the plant there figured being of an intermediate character.—JOHN R. JACKSON, *Museum, Kew.*

Housing Hard-wooded Plants.—Azaleas, Camellias, and similar plants which have been placed out-of-doors during the summer will require ere long to be removed to their winter quarters. Those performing this work may therefore be reminded that if each plant be placed in a tub of water for an hour or more before being taken indoors, so as to allow the balls of soil, which are generally hard and often dry in the middle, to get well soaked, much inconvenience in the way of watering during the winter will be saved, and the plants will also be more likely to keep in good health.—S.

TREES AND SHRUBS.

THE REDWOOD (SEQUOIA SEMPERVIRENS).



Cones and fruit of the Redwood.

This forms the second largest timber tree in California. It was discovered by Menzies in 1796, and was introduced into Europe in 1843. It is found here and there throughout the undulations of the coast range in California, on the mountain slopes, and in sheltered valleys; but it is only in the latter where forests of any extent are found, and also where the largest trees grow. I have pleasant remembrances of my first journey, accompanied by a friend, to one of the largest—probably the largest—of these forests. The Redwoods were distant twenty backwood miles, and were reached by one of the sandiest roads I ever traversed. Numerous thickets of young plants of the Douglas Spruce, and occasionally an old specimen 200 ft. or more in height, branched to the ground, grew on either hand, in the lightest of sandy soils resting on a substratum of chalk. Fifteen miles had been traversed, when we entered Pocket Canon—a very expressive name for a ravine that had by degrees been traced in the hills by a stream flowing to the Russian River—here barely sufficient for a waggon to pass through, and again widening into a glade or "pocket" of considerable extent, a kind of formation repeated down to the river. The sides of this defile were well wooded with Spruce, different kinds of Oaks, Stinking Yew (Torreya californica), Laurel (Oreodaphne californica), and an undergrowth of Ceanothuses, Arbutus, Photinia arbutifolia, &c. On the islands, where the stream forked, a few large Redwoods grew, but they were few and far between until within a quarter of a mile from the river, where they were massed into a dense dark forest, through which our road, now damp and spongy—the first damp ground we had seen for five months—wound snakelike towards the river, on the brink of which, at about 13 miles from the ocean, we stopped. The river-bed—for it was all but dry—was from about 40 yards wide, and spanned by a rudely constructed bridge of Redwood boles laced together. Following the river in its course the view was disappointingly cut off, at 300 yards or 400 yards from our stand-point by a low hill, through a narrow fissure of which the river forced its way and was lost to view. The view up the river was very different. We stood at the base of a living dark green wall at least 250 ft. in height, and a little over a mile in length. On the opposite bank was another wall of like dimensions, with the river-bed between reminding one of a broad gravelled walk in a long straight avenue, with a peep of a hazy blue mountain in the distant background. Just opposite on the edge of the forest is Big Bottom "City," in reality a hamlet of a dozen and a half small wooden huts, and a saw mill. Night was fast approaching and fortunately for us we were promised lodgings in the solitary hut on this side of the river. Our host who had "squatted" in the Redwoods, and who now got a livelihood out of the timber, kindly showed us round his estate, pointing out to us and expatiating on the giants of his domain. Until then we had failed to fully appreciate the magnitude of these trees. One lay prostrate on the ground as he had felled it the day before, and was, by actual measurement 303 ft. long and 15 ft. in diameter, cut off at 4 ft. from the ground. The largest tree I measured was 17 ft. in diameter at 6 ft. from the ground, and its height, as stated by our host, was 330 ft. Of this I had no means of testing the truth, but it certainly appeared taller than any of the others around. The trunk near the base was very irregular, owing to the presence of large buttresses (from the principal roots), which at about 12 ft. from the ground disappeared, leaving a pretty regular or rounded hole, destitute of branches for nearly 100 ft., above which they were almost regularly disposed, but of no great dimensions, and seemingly disproportionate to the size of the tree. Beneath it and all around were millions of tiny seedlings from 1 in. to 3 in. in height, forming a striking contrast to the giant parents. Many large trees were broken off at various distances from the ground; and others that had been felled some years previously had again thrown up adventitious leaders, and were forming beautiful trees. I had also an opportunity of counting the annual rings of growth made by one of these trees, and they amounted to 1250, but several of them were rather indistinct. Trees of it have been found at a depth of 30 ft. below the surface of one of the valleys in California; and Mr. Murray. in his "Notes on Californian Trees," states that "M. Lesquereux conceives that he has identified this tree among the fossil remains of the tertiary deposits of Vancouver's Island." On the table before me is a fragment of stonefied Redwood chipped from a petrified tree, which I exhumed from the middle tertiary deposits of California. But petrified Redwood is plentiful in some parts of California, and indeed the nature of the wood is such as to facilitate the process of petrifaction. It is a dull red colour, close-grained, but brittle and very light, and seems to be little affected by long-continued submersion in water. It is extensively and perhaps principally used for rail and picket fencing; but in addition to this, nearly all the houses and barns in the rural districts are built with it and covered with it in the form of shingles. As yet it has not done very well in this country except in a few favoured localities in which shelter from cutting winds is afforded. Plants of it may frequently be seen all but bare of branches, and these in a very dilapidated condition. All such ought to be cut down to within 12 in. or 24 in. of the ground, when they will soon push fresh leaders, which will, with the protect tion afforded by surrounding objects, very soon develop into beautiful heads. If it be cultivated at all, instead of singling the plants out to be starved, let us imitate Nature by planting them in clumps in naturally or artificially sheltered positions. Endlicher called the Redwood Sequoia sempervirens. Lambert named it Taxodium sempervirens, and there are the following garden varieties of it.

Sequoia sempervirens alba spica (syn. glauca).—The peculiarity of this is in the leaves and bark of the vegetating shoots being white or pale yellow, afterwards changing to a bluish green. It is a pretty kind, and quite as hardy as the common form.

S. s. Lawsoniana.—This I have not seen, but it has been described as having short, thick leaves, and a more rigid habit of growth than the type. Geo. Syme.

NOTES OF THE WEEK.

Rhododendron Princess Royal.—This, the result of a cross between R. javanicum and R. jasminiflorum, still ranks among the best of greenhouse Rhododendrons. A large specimen of it in the Chelsea nursery has been in bloom for at least two months, and will to all appearances continue in flower for some time to come. It now bears no fewer than thirty large clusters of rosy-pink or rather flesh-coloured blossoms, which are very effective on the plant as well as in a cut state.—C. S.

The Giant Autumn Crocus.—Mr. P. Barr sends us flowers of the noble Colchicum speciosum—one of the most precious gains for our open-air gardens. The flowers now sent are of a deeper red colour than those which we illustrated in The Garden last June (see p. 548). Other autumn Crocuses now in bloom, in addition to those named last week, are C. nudiflorus (rich purple) and C. Vallicola (creamy-white).

Dwarf Antirrhinums.—One of the most attractive sights now to be seen in the Tottenham nurseries is several large beds planted with a dwarf strain of Antirrhinums. The flowers, which are abundant, embrace nearly every shade of colour, and the plants themselves are not more than 15 in. high, a great advantage where narrow borders have to be planted. These, in common with some other biennials, are better in masses than in any other way, and if in mixed colours so much the better.—C. S.

Small-flowered Dahlias.—However highly large-flowered or show kinds of Dahlias may be valued by florists, none are so beautiful or useful as the small-flowered or Pompone varieties. For supplying cut blooms at this season they are invaluable, and where plants exist on which there are any quantity of buds yet to open, if these on the appearance of frost be lifted, put into large pots, and placed in a cool house, they will furnish an abundance of bloom until late in the year. We noted amongst other kinds at Messrs. Henderson's the other day Little Dear (a pretty little round flower with white, rosy-tipped petals), a pure white kind called Little Beauty, Alliance (rich velvety crimson), and a bright scarlet sort named Seraph, the best yellow being Golden Nugget.—S.

Milla biflora.—Of course, the statement "long lost" (see p. 199) cannot be meant in an absolute sense, but I think that except in Mr. Rawson's garden, the plant is not to be met with in any other English collection. I have, therefore, to congratulate Mr. Rawson on his possession of it, as well as on the skilful manner in which he has preserved it. It was re-introduced in 1873 or 1874 by Mr. Roezl, and went into the hands of the New Plant and Bulb Company at Colchester, and although many hundreds of it were introduced in the spring of 1875, I offered any reasonable price for it, but in vain. None of the great nurserymen in England, Belgium, or Holland could supply me; it had gone everywhere, and I failed to procure it. It is a plant well worth a little extra care; the whiteness of its flowers rival that of snow, and they are sweet-scented.—Max Leichtlin, *Baden Baden.*

Flower Gardening at the Crystal Palace.—The grounds here this year are unusually attractive, and from many points of view the masses of Pelargoniums, Dahlias, and other showy subjects are seen to good advantage. The most effective feature, however, is perhaps the Rosery, the sloping circular bank round which is tastefully planted in simple but appropriate designs composed of Iresine Lindeni, Centaureas, Blue Lobelia, Golden-leaved Pelargoniums, Leucophyton, and Alternantheras of various shades of colour and habit. Veronica incana is also used in these beds with good effect. The isolated round beds on the lawn are also very effective, the more so as they are placed at a greater distance apart than usual. These are planted with dwarf crimson and white-flowered Dahlias. Beds planted with Tritoma Uvaria, Phloxes, and double-flowered Sunflower (Helianthus multiflorus fl.-pl.) are likewise worthy of notice. The carpet beds are good of their kind, the colours being well arranged, and the plants not so formal and closely shorn as one generally finds them. Pink and crimson Monthly Roses, which are planted extensively round large clumps of Rhododendrons and in borders, are still gay with blossom, and the grounds throughout are in better keeping than we have before seen them. Inside the Palace the Tree Ferns and Palms are growing vigorously, and the water-tanks are, as usual, full of interesting aquatics.

The Grass in Hyde Park.—There is a long article in the "World" condemning the state of the Grass in Hyde Park, and a very unjust and ill-considered one, for the turf is as good as it can be under the circumstances.

Tasselled Asters.—Messrs. Saltmarsh & Sons have sent us blooms of tasselled Asters, which, after having been exhibited at Alexandra Park show on the 13th, 14th, and 15th inst., and again at the Crystal Palace on the 21st and 22nd inst., are now (25th) quite fresh, and would no doubt last for several more days in good condition. The blooms are very large and beautifully coloured, and for mixing in stands amongst cut flowers of other kinds are very valuable. The comparatively short season during which Asters are in bloom is, to some extent, a drawback to their culture; but by making an early sowing in heat, and two or three successional ones afterwards, and by planting these alternately, a long succession of bloom might easily be maintained. If a sowing be also made late, say the end of June, or even later, and the plants grown on liberally, lifted in autumn and placed indoors, there seems to be no good reason why good pot plants could not be obtained late in autumn, when effective flowering plants are scarcer than at any other season of the year.—S.

Kew.—In the Succulent-house there are several good plants in bloom. Stapelia deflexa has a brick-red corolla, and the lobes are thickly ciliated; it emits an abominable odour, as a proof of which we may mention that the corona of one of its flowers was quite surrounded by the eggs of some insect that had no doubt been attracted by the carrion-like smell. S. coronata has densely-hairy flowers of a reddish-brown colour, a large blotch in each lobe being yellowish, transversely barred with brown: this is a very pretty species. S. varians is also a handsome plant, and in general appearance seems to come near S. patentirostris, wrongly figured in the "Botanical Magazine" as S. sororia. Cotyledon ramosissimum is a very pretty dwarf-growing Cape succulent, with large pendent reddish flowers. Dyckia brevifolia has a rosette of stiff green leaves, striated beneath, and a short panicle of yellow flowers. It is growing near the beautiful Dyckia argentea, which has long, arching, white leaves, and is said to be the only specimen of its species in Europe. Vitis cirrhosa, from the Cape of Good Hope, has fleshy leaves, much like those of the Virginian Creeper in general outline. It is now in fruit, and its fine, bright red, coral-like fruits are exceedingly pretty. In the stove, Aristolochia Duchartrei claims our attention: it is one of the showiest species in the large genus to which it belongs; the broad, funnel-shaped mouth of the flower is a creamy-white, blotched irregularly with red-brown. Ipomœa Horsfalliæ is a beautiful climber, worthy of cultivation in any stove; its very deep, rich glossy rose-coloured flowers contrast well with the green quinate leaves. The herbaceous ground is worth a visit just now. The prettiest Toad-flax is Linaria dalmatica, a native of Eastern Europe and Western Asia; it is a fine bush about 3 ft. high, literally one mass of bright yellow flowers: the leaves and stems are very glaucous. Cosmos bipinnatus is a charming Mexican Composite, about 4 ft. high, with finely-divided feathery leaves and bright red purple-flowers, somewhat like those of a single Dahlia: all the species of this genus are extremely ornamental plants; they are New World annuals. Phygelius capensis has drooping scarlet flowers, and is very effective either as a border or wall plant. Silphium laciniatum (the Compass-plant), would make a fine object as a single specimen on a lawn; it has large heads of yellow flowers, and a stout stem about 9 ft. high; the ovate deeply-pinnatifid leaves are very handsome: this species is known in the South-western part of the United States, especially in Texas and Oregon, as the "Pilot-weed," the "Polar-plant," &c., on account of the peculiar property it possesses of turning its leaves towards the north. This "polarity" has long been familiar to hunters and other denizens of the prairies, who, when lost on dark nights, easily get their bearings by feeling the direction of the leaves. Mr. Meehan, of Philadelphia, says that those who affirm the polarity and those who deny it are both right. In a plant in his own garden the young leaves showed an unmistakable northern tendency, which they lost on becoming older. The Silphiums are all tall-growing perennials. In the Kew collection, S. terebinthaceum, S. perfoliatum, S. ternatum, and S. trifoliatum are in flower; as also an unnamed species remarkable for the very large size of its radical leaves. No other species of the genus exhibits the peculiar tendency of S. laciniatum.

THE FLOWER GARDEN.

TREES IN TUBS.

We are no admirers of trees in tubs on terraces. They are expensive and rarely ornamental objects. It is considered correct taste to use them in geometrically laid-out terrace gardens; but we could point to many terraces in England and elsewhere where their absence is no blemish. A row of trees in tubs is no more necessary to the good effect of the terrace garden than a row of balloons. The culture of Orange, Bay, and other trees in tubs is a Continental custom, and much more desirable in parts of Northern Europe, where few Evergreens can be grown in the open air, than in Britain. It is, as a rule, very much better performed on the Continent than here, and those who adopt it with us should know the conditions essential to success. Although we now often see handsome specimens of hardy Evergreens grown in tubs in this country, tender subjects alone were kept thus when the system originated. It was found that the Oleander and Orange trees could be grown very well by storing them in any sort of half-lighted, frost-proof structure in winter, and placing them in the open air in summer; and hence these plants became very popular for that purpose. But the conditions are now wholly altered in the garden, and growing trees in tubs is foolish work, entirely unworthy of a time when we have scores of beautiful Evergreens to adorn our gardens and that require no tubs.

The Survival of the most Unfit: Trees in tubs.

POLYANTHUSES.

I am just repotting my gold-laced kinds of these. They were planted out at the end of May last on a cool, shady border, where only the morning sun fell on them, and having been kept clear of weeds during the summer, top-dressed, and well watered in dry, hot weather, they have done well and made fine plants. Those large enough to make good flowering specimens for next spring are being potted into 4½-in. pots, the offsets into small "long toms." I am using a soil consisting of fibry turf, well-decayed, dry cow manure (previously baked in order to kill any insects in it), leaf-mould, a little sand, and some powdered charcoal; and when potted, the plants are placed on a deep bed of ashes, somewhat raised, which occupies a cool, shady corner. Here they will remain till severe weather makes it necessary to house them in a frame for the winter. I am in favour of earlier repotting than some growers practise, because at this season of the year the Polyanthus assumes a vigorous autumnal growth, and roots are put forth immediately below the leaves. In this manner the plants acquire renewed strength to produce their spring flowers. I like to see these roots establishing themselves in the soil in pots by the middle of September. In my case, when the plants were lifted, the soil was shaken from their roots, and any decayed or needlessly lengthened parts of the tap roots were cut away. It is not necessary to have the tap-root below the point from which the rootlets spring. I pot pretty firmly and rather deeply, burying the stalks of the lowermost leaves a little way. The deeper the plants are put into the soil now, the more serviceable in the spring late dressing is likely to be to them. My collection now consists of George IV., Cheshire Favourite, Exile, Cox's Regent, President, Lancer, a very fine sort; and the following comparatively new kinds, raised in the neighbourhood of Newcastle-on-Tyne, viz., William IV., Formosa, and Telegraph, making altogether nine varieties. I am desirous of adding to my collection Hutton's Earl of Lincoln, Maud's Beauty of England, Addis's Kingfisher, and Clegg's Lord John Russell. I have made many inquiries for these, but as yet without success. I am almost afraid that all, or three of them at least, are lost to cultivation. In addition to these I have a few specially promising seedlings which I shall bloom for the second time next spring. One of them is a flower of great size, finely and evenly laced with deep gold; but it is a pin-eyed kind. I am hopeful it may prove of value as a seed parent. I shall be glad if any reader of The Garden can assist me in obtaining plants of named varieties in cultivation that I do not already possess; but I want only those worthy the attention of the cultivator. D.

WINTER AND SPRING GARDENING.

Now that summer-blooming plants are getting past their best, cultivators must begin to consider what the empty beds are to be filled with during winter and spring. As a rule carpet bedding this season has been best, as owing to the dull, wet weather which we have experienced, there has been a scarcity of bloom where such plants as Pelargoniums, Calceolarias, &c., have been used: as to filling the beds and borders when vacant, there need be little difficulty. A bed of common Forget-me-nots edged with white Daisies forms, when in flower, a charming combination; Golden Feather Pyrethrum, where it stands the winter well, has a pretty effect as spring advances, forming as it were a bed of gold; Arabis albida edged with a broad band of red Daisies has a fine appearance; then there are Saxifrages in profusion that might be employed with advantage; Auriculas, too, when massed look well when in flower; and Aubrietia purpurea makes a charming purple bed; while Golden Thyme and Sempervivums, or as many call them Houseleeks, can be used with advantage as edgings to small beds; Pansies such as Cliveden Yellow, Imperial Blue, and Cloth of Gold, are charming subjects in their way; of Daisies there are the Aucuba-leaved, the Double White, Red and Pink, and others innumerable, all of which should be planted in large quantities; the Golden Dead Nettle, too, is a pretty, dwarf, hardy plant, of which enough is not made; then there are the hardy Candytufts, which keep in flower for a length of time; Wallflowers, such as the Yellow Dwarf and Blood-red Dwarf, and the strain used at Belvoir Castle; the double German Wallflowers are capital plants for the spring decoration of beds and borders. In addition to these there are, likewise, Primroses such as the Double Lilac or Mauve, and even the common Wood Primrose might be used in certain situations with advantage; Polyanthuses, when in flower, are also very pretty. Hardy annuals, too, such as Silenes and Saponaria calabrica, flower well during the spring months. Hepaticas, both blue and red, double and single, are likewise beautiful in spring; and Ajuga reptans purpurea makes a good, dark purple edging. Many other plants could be named, but when we consider what hosts of bulbs, such as Crocuses, Snowdrops, Squills, and Daffodils there are, one feels that enough has been enumerated, and they wholly consist of plants within the reach of all interested in spring flowers. Some handsome-leaved shrubs, such as Aucubas, Golden Euonymus, and even variegated Ivies, might also be introduced for the sake of contrast. J. B.

West Lodge, Chapel Town, Leeds.

The White Musk Mallow (Malva moschata alba).—This is one of the prettiest plants in flower at the present time. It is a pure white variety of one of our British plants, which is found growing abundantly in some localities by the roadsides in dry, gravelly soil. The white variety is more attractive in every respect, and forms a branching, pyramidal bush composed of numerous branching stems about 2 ft. high, clothed with dark green, deeply divided foliage, and it bears abundance of pure white flowers from 1 in. to 1½ in. in diameter. It is a hardy perennial, and will grow in almost any soil or situation, but a hot, dry place suits it best. The whole plant is slightly musk-scented, a circumstance from which it derives its specific name.—A. P.

THE SPECIES OF PHLOX.

By James Britten, F.L S.

With eight original illustrations by Isaac Sprague, Grantville, Massachusetts.

The genus Phlox is one of the most popular and most extensive of those for which our gardens are indebted to the woods, plains, and mountains of North America; with the single exception of P. sibirica, which, as its name implies, is a native of North Asia, all the species are North American.

The genus belongs to the Order Polemoniaceæ, an Order which, though containing comparatively few species, is of no mean importance from a horticultural stand-point; it contains not only the familiar Jacob's Ladder (Polemonium cœruleum) of our cottage gardens, and that magnificent climber Cobæa scandens, but the pretty and popular annual Gilias and Leptosiphons, as well as the invaluable Phloxes, which we are about to consider somewhat in detail. This is the more readily done, seeing that Professor Asa Gray published in the "Proceedings of the American Academy" for 1870, a revision of the species of Phlox, in which the many varieties in cultivation are reduced to their proper rank, and an arrangement based on easily recognised characters is proposed. Some such revision was urgently needed, as many mere varieties had received specific names, and were ranked as truly distinct: thus Don in his "General System," published in 1838, enumerates thirty-eight, while Professor Asa Gray only admits twenty-seven, including several discovered since Don's time. This arrangement is followed in the following enumeration, in which, however, we purpose to give fuller descriptions than the brief technical Latin characters by which each species is defined in Prof. Gray's revision, as my aim is to benefit the practical rather than the scientific botanist. I have added to the list of published figures quoted by Prof. Gray, and have in almost every case verified his references; while the descriptions are in a great measure based on the large series of specimens in the British Museum Herbarium.

The genus Phlox may be described as consisting for the most part of perennial plants, a few annual ones being known, of which P. Drummondii is the most familiar. They are herbs with opposite, sessile quite entire leaves and cymose showy flowers, which are usually white or of some shade of purplish-red, sometimes pale blue, never yellow, the cymes being composed of open clusters, which either terminate the stem or are crowded together in the upper axils. The calyx is narrow; the corolla is flat (salver-shaped) with a long tube, in which the filaments are unequally inserted; the slender style, as is usual in the Order, is three-cleft. The flowers are succeeded by ovoid few-seeded capsules, which when ripe open with some force and project the seed to some distance; cultivators will therefore do well to gather them just before they are quite ripe, placing them in a small packet where they can discharge the seeds without danger of losing them. Most of the species are readily propagated from seeds, which are freely produced, and germinate readily in heat, being sown shortly after they are ripe; the herbaceous species are, however, more frequently increased by cuttings or division. Full directions for the cultivation of the dwarf rock-garden species of the P. subulata type, will be found in The Garden, Vol. XI., p. 503. It is scarcely necessary to speak in favour of the cultivation of Phloxes; the taller species have held their own family well in spite of the disregard into which herbaceous plants were at one time falling, and the smaller kinds need only to be known to be appreciated. Some of these are at present quite unknown to cultivation, and of those of which we give engravings, some have not, so far as we are aware, been previously figured. Prof. Gray observes that natural hybrids seem to be somewhat freely produced among the species of Phlox; and that "many species have been so long cultivated and hybridized that their specific names have given place in many instances to the names by which they are distinguished by horticulturists." It does not, indeed, appear that many artificial hybrids have been raised, although there is undoubtedly a good opening here for work of this kind, especially among dwarf-growing species.

It is much to be hoped that something will soon be done with regard to introducing some of the Phloxes here described. With scarcely an exception, they are all most desirable plants, so much so, that it is difficult to specialise any one in particular. Yet with the exception of the two first species, and P. Drummondi, they are hardly known or represented even in large gardens, although it is certain that they would amply repay cultivation.

Section I.

Broad-leaved Perennial Phloxes, native of Eastern North America.

Sub-Section 1.—Thyrsifloræ.—Tall plants, with strictly upright stems, many-flowered pyramidal or oblong panicles, with very short flower-stalks; lobes of the corolla quite entire. To the two species forming this group are to be referred all the manifold tall, shrubby, perennial Phloxes which are so ornamental in the fore-grounds of shrubberies or at the back of narrow garden borders. They were formerly known in cultivation by the name of Lychnidea, and are sometimes mentioned under this title in the general literature of the end of the last, or beginning of the present, century. Sims, writing in 1792, says:—"They were first introduced under the name of Lychnidea, which, though a Latin term, is now familiarised to the English ear." (See Bot. Mag., t. 163). We have so recently entered upon the cultivation of these herbaceous Phloxes (see p. 184) that it is unnecessary to do so on the present occasion; a list of the finest named varieties will be found at the page mentioned, to which we refer our readers for cultural details.

1. Panicled Phlox (P. paniculata, L.).—This is a tall plant, with smooth, stout stems from 2 ft. to 4 ft. high and large, pointed, narrowly egg-shaped leaves, tapering (or the upper somewhat heart-shaped) at the base. It has a large pyramidal panicle of very fragrant pinkish-purple or white flowers, of which the calyx-teeth are elongated into bristle-like points. It is sometimes called P. americana in old-fashioned gardens. In the variety acuminata (which was at one time ranked as a species, and is figured as such in Bot. Mag., t. 1880) the leaves (which are broader, with narrower points) are downy beneath; the stem is also downy, or sometimes roughly hairy, and occasionally spotted below. The rough form is figured in Sweet's "Flower Garden" (2nd series, t. 114) as P. corymbosa; P. scabra (another rough plant) and P. cordata of the same work (t. 248 and 2nd series, t. 13) are also referred to this species by Dr. Gray; the latter, however, is depicted with a spotted stem, and may be a hybrid between P. paniculata and P. maculata. P. paniculata was cultivated in England by Sherard in 1732, and is engraved in Dillenius' "Hortus Elthamensis," t. 166. The variety acuminata was introduced to cultivation by Lyons in 1812, under the name of P. decussata, and from this the late or autumnal varieties have descended. Another form, called P. undulata by Aiton, was grown by Philip Miller in 1759. In its native country, P. paniculata is widely distributed in rich, moist meadows and woods. P. decussata is the name by which the numerous varieties of hybrid Phloxes are designated in catalogues. These hybrids are mostly produced between the different forms of P. paniculata; but it is probable that the next species (P. maculata) enters into some of them. It is not our intention to enter into any detailed account of these numerous hybrid forms, which differ from each other in many important features regarded from a cultivator's stand-point. Some are early, flowering in June; while others do not begin blossoming until August or September; some are scentless, others fragrant; some smooth, others hairy; the flowers are self-coloured, variegated, striped, eyed, or shaded; the plants differ in habit and in the size and form of the panicles, while there are also varieties with variegated leaves.

Panicled Phlox (P. paniculata).

2. Spotted Phlox (P. maculata, L.).—To this species, as to the last, many of the plants in cultivation under different names have been reduced by Dr. Gray. It is a smooth or rarely roughish plant, with rather slender purple-spotted stems, from 1 ft. to 2 ft. high. The lower leaves are narrow, the upper somewhat broader below, rounded at the base, and tapering to a narrow point. The panicle is usually narrow and oblong, although in one form (P. pyramidalis) the lower branches are elongated, so as to give the panicle the pyramidal appearance which is characteristic of P. paniculata. The calyx-teeth differ from those of the species last described in being narrowly triangular, short, and scarcely pointed; the flowers in the normal state are purple. It was cultivated in England by Philip Miller in 1759, and grows throughout the United States (where it is known as Wild Sweet William) in rich woods and river banks. The blossoms are often sweet-scented, a circumstance which has suggested specific names for two of the varieties. One of these, P. suaveolens of Aiton, which was introduced by Peter Collinson at Mill Hill about 1766, has white flowers and frequently spotless stems. This is the P. longiflora of Sweet's "Flower Garden," 2nd series, t. 31. The other fragrant form is described by Sweet (t. 224) as P. odorata; this has red-lilac flowers. The P. pyramidalis already alluded to is a very floribund, cultivated state of P. maculata, which is often met with in gardens, having a pyramidal panicle of fragrant red-purple flowers and the characteristic spotted stem of the species; it was known in gardens about 1800, but does not seem to have been met with in a wild state. It is beautifully figured in Smith's "Exotic Flora," t. 87, and in Sweet's "Flower Garden," t. 233. Loddiges also has a plant called pyramidalis ("Cabinet," t. 342), but his figure does not justify the name. Another variety is figured by Sweet (2nd series, t. 46) under the name of P. penduliflora, characterised by its panicles drooping before the expansion of the flowers; and he also has a handsome hybrid which he calls P. reflexa (t. 232).

Sub-Section 2.—Corymbosæ.—Stems ascending or upright, often spreading at the base; flowers in terminal corymbose cymes; corolla-lobes broad, entire, or obcordate.

A.—Plants smooth and glabrous throughout (the stem or corymb rarely roughish); calyx-teeth short, triangular; corolla-lobes rounded, entire.

3. **Ovate-leaved Phlox** (P. ovata, L.).—The stems of this species are ascending, creeping or decumbent at the base, and usually less than 1 ft. high; the leaves are bright green, oblong-lanceolate or ovate, the upper sometimes heart-shaped at the base, the lower narrowed into the leaf-stalk, acute, or pointed; the flowers are crowded on short peduncles, pinkish-purple, about 1 in. across; the calyx-teeth are short, ovate, and acute. Curtis, in his description in Bot. Mag., t. 528 (where the plant is figured), says:—"The leaves of the stalk vary very much in breadth, but the radical leaves, especially those of the young shoots which are pushed out from the root after the plant has done flowering, always preserve their character. The flowers nod on their first coming out." This Phlox is very generally known as P. Carolina, and is so called in all our older books; Dr. Gray, however, says that P. ovata is the earlier name, and is the more to be preferred, as the original of P. Carolina is one of those forms which seem to pass gradually into P. glaberrima. It was in cultivation in England before 1728, but was soon lost, and re-introduced about 1811. It is a native of woods from West Pennsylvania to Michigan, Virginia, North Carolina, &c. It is the plant figured by Sweet ("Flower Garden," t. 29) under the name of P. triflora. The species varies a good deal in habit, being sometimes much taller and more lax than is usually the case.

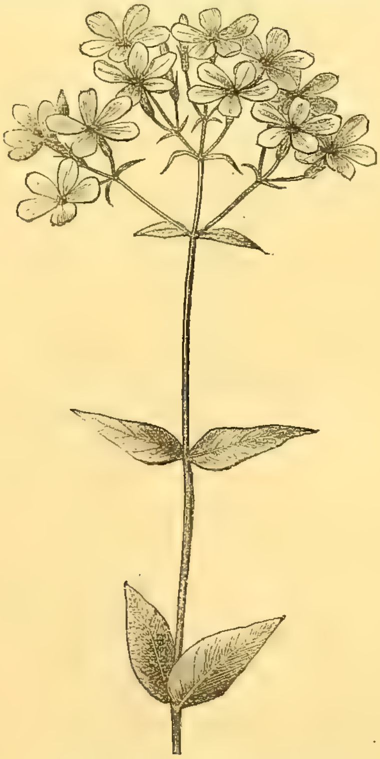
4. **Smooth Phlox** (P. glaberrima, L.).—This is a slender, erect plant, 1 ft. to 3 ft. high, with narrow, very smooth leaves (the margins being rather rough) 3 in. or 4 in. in length, tapering gradually to a point. The cymes are few-flowered and loosely corymbed; the flower-tube is long (nearly 1 in.), and the calyx-teeth sharp-pointed; the blossoms are pink, purplish, or whitish. This Phlox is figured in Sweet's "Flower Garden," 2nd series, t. 36, and to it are referred P. carnea (Bot. Mag., t. 2155, and Loddiges' "Cabinet," t. 711), a form with lilac or reddish flowers; P. suffruticosa (Bot. Reg., t. 68), with dark red-purple flowers and spotted stems; and P. Carolina, of Bot. Mag., t. 1344, which has a rough, puberulous stem; other synonyms are given by Dr. Gray. This species was cultivated by Philip Miller in 1731; its strikingly smooth appearance justifies its specific name. According to Mr. John Dominy, the early-blooming race of the tall-growing or herbaceous Phlox has descended from the form known as P. suffruticosa.

B.—Plants with upright or spreading flowering stems, which, as well as the oblong or lanceolate leaves, are more or less clammy-pubescent; calyx (which is also clammy) deeply cleft, with very narrow, elongated, or bristle-like teeth.

5. **Florida Phlox** (P. Floridana, Bth.).—A slender erect plant, with much the habit of P. glaberrima, from which it is readily distinguished by the simple, closely-pubescent stems, as well as "by the much longer and narrower teeth of the glandular-pubescent calyx." It grows about 2 ft. high, having long, narrow-pointed leaves and crowded cymes of not very numerous pale purple flowers, which are about 1 in. across. Dr. Gray doubtfully refers to this species the P. Carolina of Sweet's "Flower Garden," t. 190. As its name denotes, this species is a native of Florida.

6. **Pilose Phlox** (P. pilosa, L.).—Stems slender, often branched, erect or nearly so, 1 ft. to 2 ft. high, varying from pilose to nearly smooth, which is also the case with the narrow spreading leaves which usually taper to a sharp point, the uppermost being rounded at the base: the conspicuous calyx-teeth are very slender, often produced into spreading bristle-like points, and are nearly as long as the tube of the corolla: flowers in loose corymbs, pink or rose-coloured. This species is said to have been introduced to English gardens by John Fraser, who brought it back from North America in one of his seven voyages to that region: dried specimens had previously arrived here from John Bartram, who sent them to Sir Joseph Banks in 1764. There are good figures in Bot. Mag., t. 1307, and Loddiges' "Cabinet," t. 1251; t. 1731 of the latter work is by mistake also referred by Dr. Gray to this species. It seems uncertain whether the description of P. pilosa in Martyn's edition of Miller refers to this or to the next species; but it would appear that one of them was cultivated by Philip Miller in 1759; if so, Fraser can only claim to have re-introduced it.

7. **Showy Phlox** (P. amœna, Sims).—This species has been much confused with the preceding, which it nearly approaches in some of its forms. It is a softly pubescent plant, with simple ascending stems from 6 in. to 15 in. high, and oblong, narrow, rather acute or obtuse leaves, the upper of which are situated immediately at the base of the corymb. The calyx-teeth are narrow and acute; the flowers are bright purple, sometimes white, about as large as those of P. pilosa. It has been described by American botanists as P. Walteri and P. pilosa. Like the last-named species, it was discovered by Mr. John Fraser, in 1786, and was introduced by him, after several unsuccessful attempts, in 1810: it is figured in Bot. Mag., t. 1308. A very pretty plant, P. procumbens, is figured in Sweet's "Flower Garden," 2nd series, t. 7; it is supposed to be a hybrid between P. amœna and P. subulata.

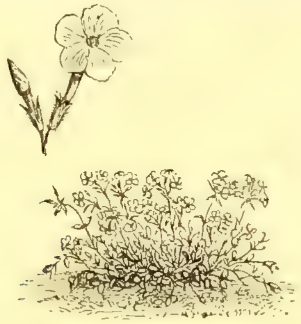


Divaricate Phlox (P. divaricata).

8. **Divaricate Phlox** (P. divaricata, L.).—This is an old inhabitant of our gardens, having been cultivated by Philip Miller in 1758. It is a somewhat low-growing plant, having spreading or ascending stems which are decumbent at the base, and give off barren shoots; the flowering stems vary from ½ ft. to 1½ ft. in height, the leaves

of which are slightly ciliated at the base; the peduncles are slender and elongated, mostly though not always one-flowered; the flowers are oblong-ovate; the lobes of the lilac or pale blue corolla are usually notched at the end, but sometimes (in var. Laphami) entire; the slender calyx-teeth are much longer than the corolla-tube; the flowers form a loose-spreading, panicled cyme. This Phlox is figured by Curtis in Bot. Mag. t. 163, and in Loddiges' "Cabinet," t. 1418; it is the P. canadensis of Sweet's "Flower Garden," t. 221, which is a strong-growing form of more upright habit.

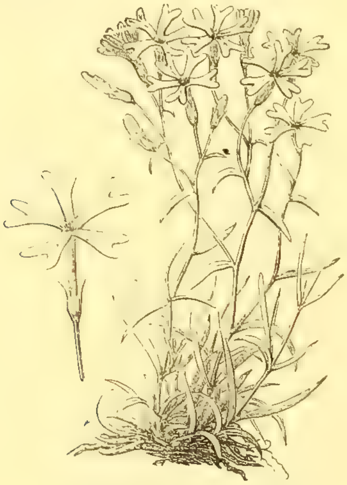
9. Creeping Phlox (P. reptans, Michx.).—This species is one of very distinct habit, having long creeping runners rooting at the joints given off from the base of the stem. The radical leaves and those on the runners are roundish-ovate, rather smooth and thick; those on the stems are few, narrower, longer and rather blunt. The flowering stems are short, from 4 in. to 10 in. high, terminated by a rather close, few-flowered cyme of showy violet-purple blossoms, the lobes of which are entire; the narrow calyx-teeth are shorter than or about as long as the tube. This species was another of those discovered in Georgia by John Fraser in 1786; living plants were brought by him to Europe in 1801. It is the P. stolonifera of Sims (Bot. Mag. t. 563); a form with larger and richer-coloured (reddish-violet) flowers and broader and darker leaves is figured in Sweet's "Flower Garden," 2nd series, t. 293, and in Loddiges' "Cabinet," t. 1596 as P. crassifolia. It is a desirable plant for rockwork. A very handsome form of robust habit, having rose-coloured flowers with a darker centre, is that named P. verna in many recent catalogues.


Vernal Phlox (P. verna).

Sub-Section 3. Sparsifloræ.—Low-growing, diffuse plants, with linear leaves and pale violet flowers with wedge-shaped lobes, each lobe deeply divided into two narrow segments.

10. Bifid Phlox (P. bifida, Beck.).—This species has slender, ascending-branched stems, 6 in. high; linear leaves which are at first pubescent, becoming nearly glabrous; and few pale purple flowers on slender peduncles, the lobes of which are cleft to or even beyond the middle. It is a native of the prairies of Illinois and Missouri.

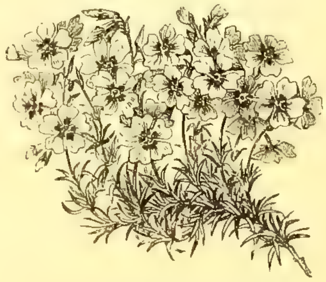
11. Stitchwort Phlox (P. Stellaria, Gray).—This is a quite smooth, tufted plant, with rather rigid narrowly linear leaves, the upper are pale blue, sometimes nearly white, the lobes being deeply cleft. This elegant little species, which has not previously been figured, has at present only once been found, and that as long ago as 1829; it was discovered by the late Dr. Short in the fissures of the most precipitous rocks of the cliffs of Kentucky River, probably above Lexington. The specific name has reference to the resemblance which the plant presents to a Stitchwort both in leaves and flowers.

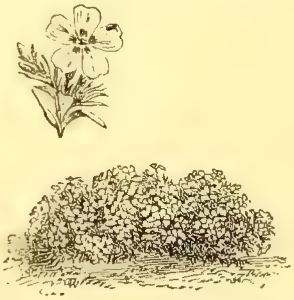

Stitchwort Phlox (P. Stellaria).

Section II.

Dwarf, perennial, shrubby, evergreen Phloxes, with tufted, creeping stems, subulate (awl-shaped), fascicled leaves, and inversely heart-shaped corolla-lobes. The plants falling into this section are regarded by Prof. Gray as forms of one species.

12. Awl-leaved Phlox or Moss Pink (P. subulata, L.).—This is a very beautiful little plant as will be seen from the figure of one of its varieties in The Garden, Vol. XI., pl. 78. It is a native of dry rocky hills and sandy banks, from New York to Michigan and Florida, forming broad matted tufts, which when in flower have a very handsome appearance. The leaves are very numerous, awl-shaped, lanceolate, or narrowly linear; the calyx-teeth are awl-shaped and erect, with spiny point; the corollas, which are ½ in. to 1 in. across, vary in colour from pinkish-purple or rose with a dark centre to white, the wedge-shaped lobes being notched or more rarely entire. The flowering stems are erect, the blossoms being disposed in few flowered cymes. This species was introduced to English cultivation in 1786, and is figured in Bot. Mag. t. 411. P. setacea is given at t. 415 of the same work, where it is stated to have been introduced by Mr. John Fraser in 1788. Although often figured and described as a distinct species, it has no characters by which it can be separated from P. subulata: the leaves are rather longer, and less crowded.


Awl-leaved Phlox (P. subulata).


Bristly Phlox (P. setacea).

P. nivalis is a very pretty form with snow-white flowers, which differs from P. subulata in having a short style, and ovules commonly, but not always, in pairs (rarely three) in each cell, whereas in P. subulata the style is usually long and the ovules are solitary: this is figured in Loddiges' "Cabinet," t. 780 and in Sweet's "Flower Garden," t. 185. P. Hentzii has a white corolla with entire or nearly entire lobes, and a short style. P. aristata of Loddiges' "Cabinet," t. 1731, seems to be a weak form of this, with fewer and much less rigid leaves and white flowers with notched lobes. P. frondosa is a vigorous garden form, and one of the best known at the present time. P. Nelsonii, a pretty little white-flowered plant, is a garden hybrid between two of the above P. subulata named forms, which was raised about twenty year since by the then rector of Winterton, Norfolk, after whom it is named; it is the result of a cross between P. nivalis and P. frondosa, according to Mr. Burbidge, or between P. nivalis and true P. subulata, according to Mr. Niven in The Garden, Vol. XI., p. 502—where will be found full cultural details with reference to this group of Phloxes. Even in its wild state P. subulata is a very variable plant: a large specimen in the British Museum Herbarium, sent from North America by Bartram in 1754, has quite a lax, diffuse habit.

Section III.

Western species, shrubby or partly so, rarely herbaceous, with one to three ovules in each cell; branches one or few-flowered; leaves mostly small or narrow, with more or less thickened margins. The species of this section nearly approach each other, and are hence difficult of discrimination.

Sub-Section 1.—Evergreen Perennial Phloxes, forming cushion-like tufts; leaves short, sometimes very small, densely clothing the stems up to the solitary sessile or nearly sessile flowers, persistent (not falling away) when old: ovules solitary. The species in this sub-section are arranged in an order commencing with the smallest and most imbricated-leaved, going on to those of laxer habit with spreading leaves.

A.—Dwarf Moss-like plants; leaves very short, imbricate, scale-like: covered especially at the margins with cobweb-like hairs, corolla lobes entire.

13. **Richardson's Phlox** (P. Richardsonii, Hook).—This beautiful species is a native of the Arctic sea-shore of North America, where it was discovered by Dr. Richardson, who accompained Sir John Franklin in two of his earlier expeditions, and in honour of whom it is named. It forms lax, cushion-like tufts, with short, narrow, leaves about 3 lines long, slightly woolly at the margins, and bearing a profusion of brilliant lilac flowers, the tubes of which exceed the calyxes by about half their length. It is figured in Hooker's "Flora Boreali-Americani," vol. ii., t. 160.

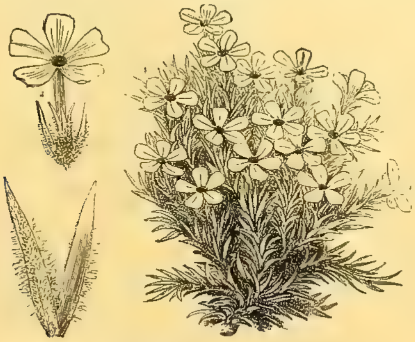
14. **Selaginella-like Phlox** (P. bryoides, Nutt.).—This small species forms dense, copiously and softly woolly cushions, and resembles Selaginella impestris in habit; the cushions are supported (in old plants) upon thick, tough, woody stems. The leaves are scale-like, compactly imbricated in four ranks, about ½ line long; the tube of the corolla slightly exceeds the calyx, and the wedge-shaped lobes are about ½ line in length. This was discovered by Nuttall on the dividing ridge of the Rocky Mountains (about lat. 42°), and so far as we are aware has not since been met with.

15. **Mossy Phlox** (P. muscoides, Nutt.).—This little plant closely resembles the preceding; it is densely tufted, with copiously ciliated, hoary-pointed, very short leaves, compactly imbricated as in the last species; a large, descending root, and large, white sessile flowers with a yellow spot in the centre, the lobes being wedge-shaped and entire. "The whole plant is depressed to the appearance of a hoary Bryum, no part of it hardly rising to the height of ½ in. from the ground." It is a native of the Rocky Mountains, at the sources of the Missouri.

B.—Broadly-tufted plants with more rigid subulate hairs, 3 or 4 lines long, less closely adpressed to the stem than in the three preceding; flowers white.

16. **Hood's Phlox** (P. Hoodii, Richards.).—Dr. Richardson, who named this Phlox in memory of his lamented companion, Lieut. Hood, says:—"This beautiful species is a striking ornament to the plains in the neighbourhood of Carlton House, forming large patches, which are conspicuous from a distance." It is an almost smooth plant, with many densely-tufted stems, imbricate silvery, shining, rigid, awl-like leaves, which are woolly at the margins, and terminal, sessile, solitary flowers. It occurs throughout the Saskatchawan region, from lat. 54° to the Rocky Mountains, about lat. 44°.

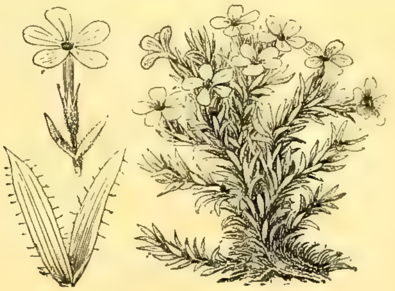
17. **Hoary Phlox** (P. canescens, Torr. & Gray).—This species forms broad and mostly compact mats, a few inches high, grey or whitened by the soft cobweb-like or woolly down with which the small, slender, needle-like, rigid, ascending leaves are thickly covered. The tube of the corolla exceeds the calyx; the pretty, abundant white corollas have entire or slightly notched lobes. As will be seen from our engraving, it is an attractive plant, well worthy of being introduced to cultivation. It is a native of the Rocky Mountains of Colorado, extending throughout Utah to New Mexico and the Sierra Nevada.



Hoary Phlox (P. canescens).

C.—Leaves green, needle-like or subulate, rigid or loose, destitute of cobweb-like hairs.

18. **Tufted Phlox** (P. cæspitosa, Nutt).—This species, as will be seen from our figure, much resembles the last in habit. It forms dense cushion-like tufts 3 in. or 4 in. high, having short, rigid, unusually imbricated leaves, which completely cover the short stems, and are glabrous except at the edges, which are fringed with short bristly hairs. The solitary flowers which terminate the branches are pale violet or white. It is a variable plant: the variety rigida has been described as a species; it has needle-like, recurved, spreading leaves, which are thinly sprinkled with glandular hairs. Var. condensata is a very compact form with smaller flowers, which has been confounded with P. Hoodii. It is a Rocky Mountain plant, extending from Colorado to Montana, Oregon, and Sierra Nevada, rising to the height of 11,000 ft.



Tufted Phlox (P. cæspitosa).

19. **Douglas's Phlox** (P. Douglasii, Hook.).—A beautiful plant, forming broad but rather open tufts, glabrous or slightly pubescent; stems ascending, much branched; leaves needle-like, usually spreading ½ in. in length, with tufts of shorter ones crowded in the axils; corolla-tube longer than the calyx; corollas purple or white, with entire obovate lobes about 3 lines long. This is indeed, as Sir William Hooker describes it in the "Flora Boreali-Americani" where the plant is figured t. 158—"a most beautiful species, bearing copious and almost sessile blossoms, and intermediate in habit, as it were connecting the P. speciosa, subulata, &c., with the little P. Hoodii." It is a variable plant, growing on high plains and mountains, at from 5000 ft. to 10,000 ft., and extending from Colorado and Utah west to the Sierra Nevada and the Cascades. The var. diffusa (P. diffusa, Benth.) is a form of moister or more shaded situations, with procumbent stems and laxer, less rigid leaves: it occurs chiefly on the Pacific slopes from the Yosemite to lat. 49°. The var. longifolia is a form with more slender and rigid leaves, from half to two-thirds of an inch in length: this occurs chiefly east of the Rocky Mountains, and in Utah P. Douglasii was introduced into cultivation in England from the Rocky Mountains about thirty years since.

Sub-Section 2.—Beautiful plants woody or sometimes herbaceous at the base, with numerous single or loosely tufted stems; leaves usually long and narrow, rarely subovate; flowers solitary or sub-cymose on long peduncles.

A.—Flowers with long styles—a character, Dr. Gray observes which is "most convenient and useful in the arrangement of these otherwise almost inextricable Western Phloxes."

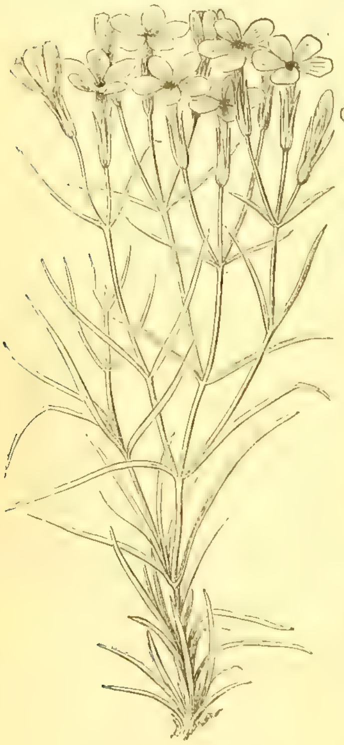
Frigidæ: leaves and stems loosely tufted somewhat flaccid.

20. **Siberian Phlox** (P. sibirica, L.).—A very beautiful plant, recalling to mind, especially in dried specimens, a dwarf Dianthus. The stems are from 2 in. to 4 in. high, pilose-pubescent; leaves narrowly linear, often villose at the margins; flower-stalks without leaves, growing singly from the axils of the upper leaves; flowers purplish, or white with ten purple stripes, often nearly 1 in. across; corolla-tube as long as or a little longer than the calyx; lobes entire or often notched. This is the only species of Phlox which is not American: it is a native of Eastern Siberia and Kotzebue's Sound.

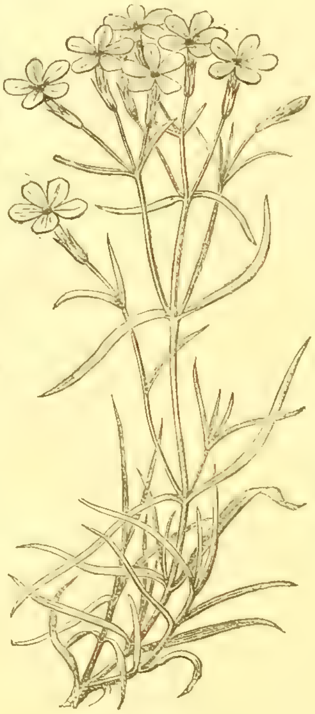
Temperatæ: Stems shrubby at the base and (as well as the leaves) rather rigid, erect, or ascending; flowers white or rose-coloured, the tube exceeding the narrow, subulate calyx-lobes.

21. **Narrow-leaved Phlox** (P. linearifolia, A. Gray).—This species and the next are very similar in habit and general appearance, as is shown by the figures given. P. linearifolia is a very smooth plant, occasionally somewhat hairy-pubescent above, from 1 span to 1 ft. high, with corymbs of numerous handsome flowers; leaves very narrowly linear, 1 in. or 2 in. long; calyx, angled, deeply divided, the segments broadly membranous at the base, and produced above into needle-like points, which nearly equal the tube of the corolla in length; corolla-lobes obovate, wedge-shaped, entire; ovules two in each cell. This is the P. speciosa of Lindley in the "Botanical Register," t. 1351, but not the plant first described by Pursh under that name. It is a native of the interior plains of Columbia River and its tributaries.

22. **Long-leaved Phlox** (P. longifolia, Nutt.).—This is a somewhat viscid-pubescent or smooth plant, with tufted stems about a span high from a woody base; the leaves are narrowly linear, or sometimes lanceolate, from 1 in. to 2½ in. in length; calyx much as in the last species, but smaller and considerably shorter than the corolla-tube; flowers, white; corolla lobes obovate or oblong-wedge-shape, entire; ovules usually solitary in each cell. A very distinct, and, for gardening purposes, a much more desirable form is the var. Stansburyi, which is a more rigid, more pubescent, denser, and dwarfer form, with broader (lanceolate or ovate-lanceolate) leaves about ½ in. long, and with proportionately larger and more conspicuous flowers, the corolla-tube of which is often twice as long as the calyx, and the lobes sometimes notched; there are often two ovules in each cell. From dried specimens this plant appears very distinct, but it is stated that it passes into the genuine form. P. longifolia is a native of the eastern part of the Sierra Nevada, extending north and east through the interior regions to and beyond the Rocky Mountains; the var. Stansburyi occurs chiefly in the southern districts, extending into New Mexico and Arizona. P. humilis of Douglas is a small form of P. longifolia with shorter peduncles.



Narrow-leaved Phlox
(P. linearifolia).

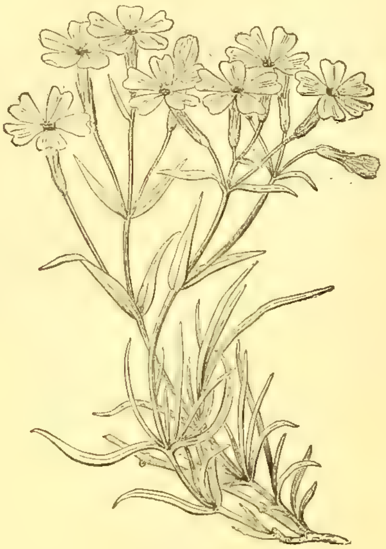


Long-leaved Phlox
(P. longiflora).

23. **Oregon Phlox** (P. adsurgens, Torr.).—This is a small-flowered species, known only from Oregon, and not likely to be of horticultural importance. It is a smooth plant, with spreading, ascending, slender stems, under 1 ft. high; the leaves are ovate or ovate-lanceolate, acute, ½ in. long, often shorter than the internodes; the peduncles subcymose, and, as well as the calyxes, glandular-pubescent; corolla-tube much exceeding the calyx, nearly 1 in. long, with obovate entire lobes, 5 lines in length; style exserted.

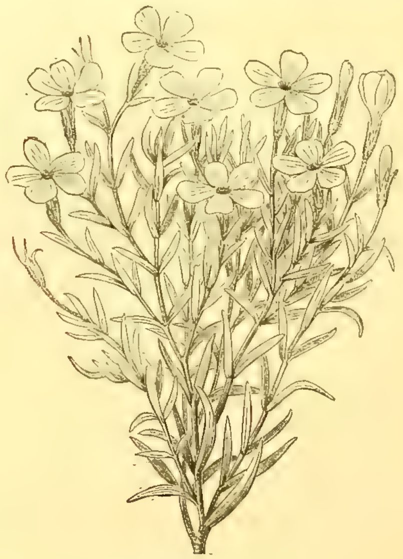
B.—Flowers with short styles—*i.e.*, style not longer than the ovary or stigmas.

24. **Handsome Phlox** (P. speciosa, Pursh).—This well-named species is from 1 ft. to 3 ft. in height, the flowering stems (which are viscid-puberulent above or nearly glabrous) diffusely ascending from a branching woody base; the leaves are lanceolate or linear, 1 in. to 2 in. long, the upper broader at the base; the showy white or rose-coloured blossoms are in many-flowered corymbs, the lobes being deeply or sometimes but slightly notched, a third to half-an-inch long, the tube but slightly exceeding the calyx. This beautiful Phlox is a native of the Sierra Nevada, extending northward to the borders of British Columbia. P. Sabini of Douglas is a form with entire or nearly entire corolla-lobes: the var. Woodhousei is a dwarf form, with linear lobes and smaller flowers, and is found in Arizona. Our figure represents a low diffuse-growing variety.



Handsome Phlox (P. speciosa).

25. **Dwarf Phlox** (P. nana, Nutt.).—This is a glandular, pubescent or hairy, sometimes almost smooth plant, with spreading, branched stems from a woody base, from a span to 1 ft. in height: the leaves are linear: flowers few, but showy, the rose-coloured or white corollas being usually 1 in. or 1⅓ in. across: the tube slightly exceeds the calyx in length, and the large broad lobes are entire or nearly so. There are usually three ovules in each cell. There is a smooth variety glabella, in which the branches are more simple, and erect, with narrower leaves. This species is a native of New Mexico and the adjoining borders of Texas and Colorado.



Dwarf Phlox (P. nana).

Section IV.

Annual species, natives of Texas, more or less covered with sticky, many-jointed, mostly glandular hairs: leaves rather broad, the upper alternate; calyx-lobes (in fruiting specimens divided almost to the base) slightly recurved or spreading; style shorter than the stigmas; seeds subulate-angulate.

26. Drummond's Phlox (P. Drummondii).—This popular garden annual, in some of its many forms, is now as well known as the earlier-introduced shrubby species. Seeds of it were sent over to this country in 1835 from Texas by its discoverer, Mr. Thomas Drummond, whose name it bears, and these soon vegetated, since which time the species has been deservedly popular. It is hardly necessary to describe in detail so well-known a plant; but in addition to the characters of the section, the leaves are often lanceolate or oblong, the upper subcordate or half amplexicaul at the base; the flowers are corymbose, upon very short pedicels; the calyx segments linear-subulate and pointed; the corolla-tube much curved and hairy, three times longer than the calyx, the lobes being wedge-shaped and entire; ovules solitary in each cell. The flowers in the wild plant are of a beautiful purple with a darker eye; but the cultivated forms present almost every variety of colour, from white to scarlet, passing through numberless shades of lilac, pink, and rose, some being beautifully striped and variegated. This species is figured in Bot. Mag., t. 3441; "Botanical Register," t. 1949: and Sweet's "Flower Garden," 2nd series, t. 316.

Besides the mere florist's varieties, two well-marked forms of this species are described by Dr. Gray. Var. villosissima is a very distinct-looking plant, which ought to be brought into cultivation. The stems, leaves, and calyx-lobes are covered with long viscid hairs; the leaves are narrowly lanceolate; and the flowers are fewer in number, but larger, and very handsome. Var. tenuis, on the other hand, is almost useless for garden purposes; it is about a span high, with less hairy and mostly linear leaves, and loose-flowered cymes of small flowers; it is a native of Eastern Texas.

27. Rœmer's Phlox (P. Rœmeriana, Scheele).—This elegant Phlox does not appear to have been figured. It is a low-growing species, branched from the base, almost smooth, except for the hairy margins of the leaves and calyx-tube; the leaves are oblong-lanceolate, the upper spathulate, those of the stem mostly alternate; calyx-lobes linear, spreading; flowers few, but very large and rose-coloured; the corolla-tube about equalling the somewhat spreading calyx-lobes; ovules many (four or five) in each cell. This desirable species is a native of Central Texas.

Phlox Hookeri, a plant with bright yellow flowers, figured in Hooker's "Flora Boreali-Americani," ii., t. 159, is now considered a species of Gilia.

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NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Mountain Evening Primrose (Œnothera montana).—Few plants just now are more effective than this, its handsome yellow flowers being produced on established plants in great quantities. Though the blossoms individually do not last long they are produced so freely in succession that they may make a good display for many weeks either in the rock garden or shrubbery. In character this Œnothera somewhat resembles Œ. macrocarpa, and is well worth culture where a showy autumn-flowering plant is required.—C. S.

Flower Garden on St. Paul's.—It is only twelve years since the Dean and Chapter of St. Paul's actually spent £40 on the improvement of its churchyard. And yet people say it is neglected! Few know that there exists a flower-garden on the roof of St. Paul's, the products of which gained a verger prize at the last City of London Flower Show. He does not, however, go so far as Quasimodo's successor at Notre Dame, but draws the line at Cabbages.

THE FRUIT GARDEN.

THE PEAR AND FILBERT IN KENT.

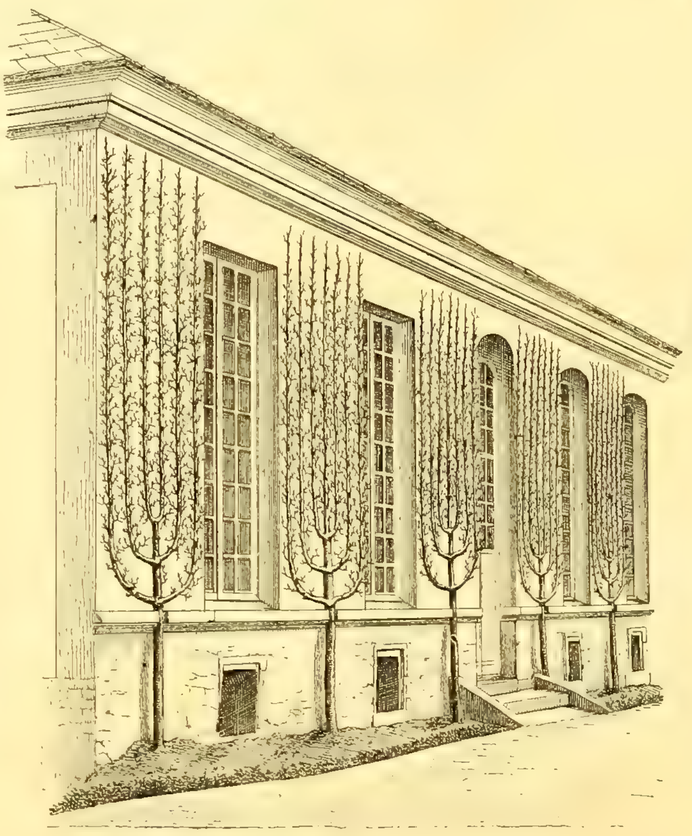
(*Continued from p.* 276).

Pears

are not systematically grown on a large scale in Kent, and are not attended to by any means as they should be. They are grown more in East Kent than in any other part of the county. Many of the old trees are of indifferent kinds, whose fruit cannot compete with that grown abroad, and is frequently a drug in the market. The chief sorts grown are the Chalk (a second-rate Pear), Doyenné d'Eté, Beurré de Capiaumont, Chaumontel, Catillac (most excellent for cooking), Williams's Bon Chrétien, Marie Louise, Hazel, Beurré Rose, Bergamot, Duchesse d'Angoulême, the Seckle (with a fine aromatic flavour), and two or three common early Pears whose names are not known. There are signs that fruit growers are bestowing more care on the cultivation of Pears, and are planting good sorts that will ripen in due rotation. Good Pears generally command high prices, as those who have to buy them for dessert know well, for it is difficult to get any good-looking Pears under 6d. to 8d. each, and such Pears cost but little more to grow than the small, hard, indifferent sorts that take up space in many Kentish orchards. Pear trees are planted with Apple or Cherry trees, and occasionally by themselves with bushes under them. They require little pruning after they are well established, and bear spud cultivation as well as Apple trees, though they do better on Grass than on land that is cultivated.

Filberts.

The Filbert (Corylus Avellana)—a corruption of "full beard," as it was originally styled, to distinguish it from smaller Nuts—so highly appreciated at dessert, is cultivated extensively in the neighbourhood of Maidstone. It is not grown to any extent beyond a circuit of seven or eight miles round that town, though there are a few plantations at Ightham, about thirteen miles north-west of it, and in the West Kent fruit-growing district. It does well upon the best soils of the rag-stone, but thrives exceedingly upon the Atherfield clay, locally called the "coomb," which has been described as follows by a practical farmer:—"There is a very narrow belt of land running along the escarpment of the rag-stone, which, though of a very heavy and adhesive texture, is astonishingly productive in Hops, fruit, and grain." The situation best suited is a southern slope, sheltered from rough winds, which are apt to snap off the delicate shoots in the early spring and bruise the blossoms. Filbert trees are always grown on cultivated land, planted under standard Apple, Pear, and Plum trees. Fruit bushes are generally planted as well. Filbert trees are set about 13 ft. apart, giving 257 trees to the acre: they are invariably propagated by suckers obtained from old trees, and put in nurseries until they are two or three years old, being carefully pruned and trained to the required form. The first operation in an established Filbert plat is to open a small trench round each tree, to get the suckers or "spawns" from off the roots and lower part of the stems. Rags, shoddy, fur-waste, sprats, "sheep-trotters," Hop-bines, are used for manure. Digging the land is done with the spud peculiar to Kent, before Christmas if possible; before the trees are pruned, that the bloom, which appears very early, may not be rubbed off. Pruning or cutting Filbert trees is a most elaborate process. Each branch is examined by the tree cutter, who leaves the finest young wood that he sees, or ought to see, at a glance if he knows his business, to be bloom-bearing, and cuts away all wood of coarser, older growth, comparatively unfruitful. The "bloom," or cluster of pistilline flowers, is remarkably pretty, like a small scarlet star upon the extremities of the shoots. It is fertilized by the "catkins," as the stamineous flowers are called, growing on the same branches, some of which are left by the judicious cutter. After the pruning the trees look mere skeletons. A stranger who had seen Filbert trees thus naked and forlorn in the winter, would be surprised to see them in September with a wonderful wealth of leaves, branches, and Nuts upon them. A typical tree has a stem of about 2 ft. in height, from which the branches are trained to spread out laterally, and to form a centre of a saucer-like shape, with a diameter of 7 ft. or 8 ft., and a height of about 6 ft. After pruning, nothing is done until July, when most growers have the long suckers taken from the middle of the trees, and the leading shoots are broken off to relieve them from the burden of supporting unproductive wood. Mr. Webb states that he saw some Filbert trees near Maidstone which had grown 40 lbs. of Nuts on each tree. A crop of a ton, or even more, is occasionally grown; but the average yield may be set at about 8 cwts. per acre. Filberts are frequently sold on the trees, as the growers have Hops to attend to, and do not want the trouble of picking and selling them at the busiest time of the year. They are for the most part sent to Covent Garden, in sieves which hold about 28 lb. of green, and 40 lb. of ripe or harvested Nuts. It is customary to send a portion of the crops to London when the bunches are quite green, and the kernel not by any means fully developed. There is a certain demand for these, as they look well on the table, though at this time they have but a mere *soupçon* of the true Filbert flavour. When Filberts sell well at this stage, some growers send their whole crop up, as the weight of green Nuts is nearly double that they would have if duly harvested. Prices of Filberts range from 5d. to 1s. per lb., according to the supply. They are not much influenced by the competition of foreign Nuts, none of which have the flavour or the appearance of the genuine Kentish Filberts, although the quantity of Nuts of all kinds imported is very large. The value of the imports of this duty-free fruit, which chiefly comes from Belgium, France, and Brazil, amounted to £584,325 in 1875, as against £408,291 in 1871. The Kent Cobnut, or "Lambert's Filbert," is superseding the old-fashioned Filbert in a degree, and is generally preferred for new plantations. It is a much larger Nut than the Filbert, with a thicker shell, and is a more hardy and more abundant bearer. As these trees do not thrive so well under standards as Filberts, thay are now generally planted by themselves, with bushes under them, or with Plums, Damsons, or half-standard Apple trees. They are treated in the same way, requiring, perhaps, to be cut a little harder than Filbert trees. A casual observer would not notice the difference between Cob and Filbert trees, but their leaves are different; the whole growth of the former is more vigorous, and its "bloom" or pistilline cluster is darker than the Filbert bloom. As a rule Cobnuts make rather higher prices than Filberts.



Profit and Ornament on Surfaces usually bare.

Outhouse covered with Plum trees in the Potagerie at Versailles. Photographed by Jules Lemercier in April of the present year, and engraved exactly after the photograph.

Knight's Monarch Pear.—Although early kinds of Pears are this season long in becoming fit for table, this kind is dropping from the trees and showing signs of premature ripening. It is certainly neither heat nor drought that is causing the fruit to fall, as the season has been unusually wet and the temperature low.—J. Groom.

PLATE XCIII.

THE BEST FIGS

(WITH A COLOURED FIGURE OF NEGRO LARGO).

Drawn by H. HYDE.

No first-rate fruit has been so much improved of recent years as the Fig. So little was it grown in this country that a few old kinds formed our collections, while far finer varieties were in cultivation in Spain and Italy. Some of these have recently been obtained for our gardens. Of the best yet introduced we now give a selection, with a figure of a very fine variety.

Negro Largo.—Fruit of the largest size, long pyriform; skin jet black, marked with longitudinal ribs extending the whole length of the fruit; flesh pale red, very tender and juicy, and the juice is highly flavoured, and when fully ripe the flesh and skin become quite melting. A very strong-growing, but free-fruiting variety.

Bourjassotte grise.—Fruit medium size, roundish, somewhat oblate, skin chocolate, covered with a thin bloom; flesh, deep dark red, thick syrupy juice, very richly flavoured: very best Fig in cultivation.

Grosse verte or Nebian.—Fruit large or above medium size, roundish, obovate, marked with obscure longitudinal ribs, skin a bright pea green, becoming a little yellow at maturity, and not covered with any bloom. Flesh very dark red throughout, with a rich and sugary flavour: very excellent large Fig, requiring heat to ripen.

Lee's Perpetual or Brown Turkey.—Fruit large and pyriform, skin brownish-red covered with blue bloom; flesh, red and very luscious. One of the best for outdoor culture as a standard, being hardy: good for general use.

De la Madeleine.—Fruit below medium size, roundish, turbinate, and flattened like an Onion; skin yellow, dotted with long greenish white specks; flesh white under the skin, with a faint tinge of rose towards the centre. A very early Fig and hardy: will bear well on open walls.

White Marseilles.—Fruit above medium size, quite round, with well-marked, longitudinal ridges running from the stalk to the apex; skin green, turning to pale green when ripe; flesh opaline, exceedingly rich and sugary: one of the most delicious Figs in cultivation. Forces well. Fruit ripens freely against a wall in the open air. This is the variety so much grown in Sussex.

White Ischia.—Fruit small and turbinate; skin greenish yellow, and so very thin that when ripe the flesh shines through and imparts a brownish tinge to the fruit. This is well adapted for pot culture, and forces well. It is also very productive.

Royal Vineyard.—Fruit medium-sized, long pyriform, and prominently marked with longitudinal lines; skin very thin, hairy, of a fine purple colour, and covered with thick bluish bloom; flesh bright reddish, very juicy and melting. An abundant bearer.

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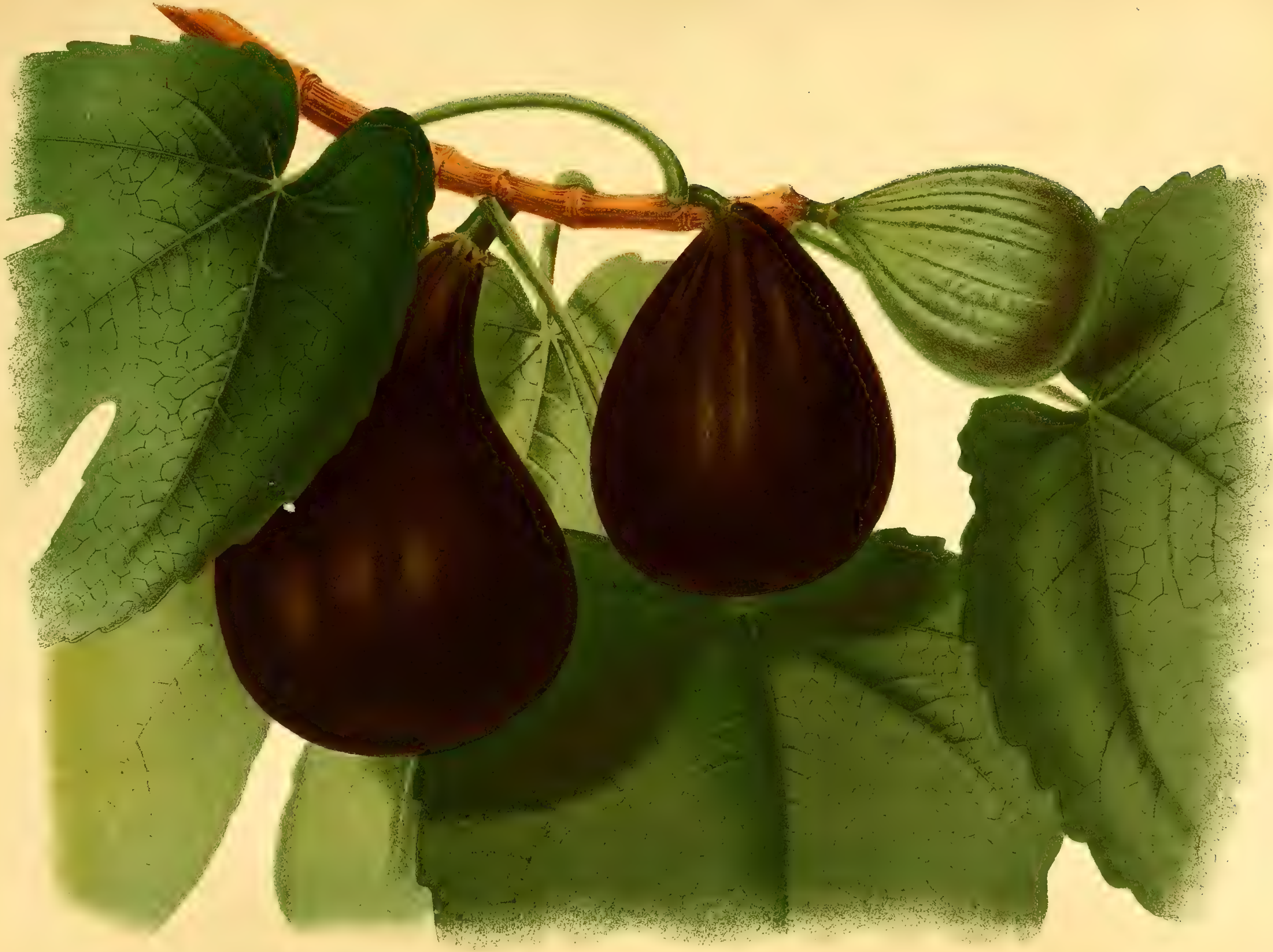
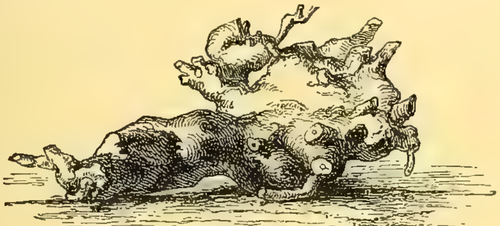


Col di Signora Bianca.—Fruit medium-sized, pyriform, and marked with very distinct, longitudinal ribs; skin thick green, changing to yellowish white, and covered with a fine grey bloom; flesh of the darkest blood-red: very thick, syrupy, and most delicious. Fine large Fig, but requiring heat.

Brunswick.—Fruit very large, long pyriform, oblique at the apex, which is very much depressed; skin greenish yellow in the shade, tinged with pale brown on the other side; flesh opaline, tinged with very pale flesh colour towards the centre. Fine large Fig for general culture. There is a wonderful difference between the appearance of the first and second crops of fruit of this Fig, the fruit of the former being very long, that of the latter short and turbinate.

AN OLD VINE STEM.

In some of the more remarkable artistic treasures of Nineveh arranged in the British Museum, trellises of Vines may be seen pretty much as in many warm countries to-day, showing the great age of the Vine as a cultivated plant; but it is no less remarkable as regards the great variety of ways in which it is grown and trained—a variety of which those who see it only in our hothouse have little notion. This little cut shows an old Vine-stem after pruning in Aulnis in the west of France. This ancient-looking stump is the opposite in character of the tree-supported Vines of the south of Italy. A series of sketches showing the various ways in which the Vine is trained would be very interesting.



Bleeding in Vines.—This is an overflow of sap, and is at times so severe that they "almost bleed to death." The Vine is furnished with an enormous supply of sap, which begins to flow very freely and with great force shortly before growth commences, and continues until the Vine is about in full leaf. The cause of bleeding is late pruning. The pores, being naturally open for the flow of the sap, have not time to heal over and close up before the sap is in motion. The best preventive practice then is to prune as early as possible. Never prune whilst the buds are swelling. Various methods have been proposed to stop or arrest this bleeding, such as charring the cut ends of the shoots, or covering them with sealing-wax, cut Potatoes, painters' knotting, or some of the various patent styptics. None of these, however, are quite effectual. It seems almost impossible to close these pores, or to arrest this extraordinary tide by artificial means. The painters' knotting will check it to a certain extent, but some cases are so bad as to baffle all our feeble attempts, and these must be left for Nature herself to cure.—" Florist."

Fruit in Italy.—We live on fruit. In every one of the little villages round about any large town in Italy are to be found in the autumn cartloads of Water Melons, Figs, Peaches, Nectarines, Tomatoes, Nuts, Egg fruit, and yellow Melons. The most beautiful are the Water Melons, with their deep green skins and rose-red frosted-looking flesh, where the big black seeds sit like ebony beads; and perhaps they are the most useful. "Si beve, si mangia, si lava la faccia," say the Italians of these Water Melons, good for eating, drinking, and washing one's face all at once; as the fruit is of enormous size and depth, and the proper way of eating it is to work your way steadily through a section, into which as you go on you bury your face from ear to ear. The small green Figs are now in their full perfection. These should have three characteristics: the tear of a penitent, the neck of a hanged man, the cloak of a beggar. When you get one with a drop of syrup on the point, a wry-necked kind of stalk, and a rugged, stained, and disordered-looking skin, you have got something absolutely unknown to us in England. It is like the finest kind of dried Fig, with the aroma and softness of the fresh fruit. The Peaches are of two kinds—one soft and luscious, like our best; the other hard and meaty, with the stone embedded in the flesh, and not able to be set free. But anyhow, one is thankful for fruit at this terrible time, when wine is a necessity, meat an abomination, and water alone not sufficiently refreshing. —" Queen."

THE GARDEN-CRAFT OF SHAKESPEARE.

(*Continued from p.* 279).

II.—Gardens.

(1) *King* (*reads*). It standeth north-north-east and by east from the west corner of thy curious-knotted garden.
Love's Labour's Lost, act i., sc. 1.

(2) *Isabella.* He hath a garden circummured with brick,
Whose western side is with a Vineyard backed;
And to that Vineyard is a planched gate
That makes the opening with this bigger key:
The other doth command a little door
Which from the Vineyard to the garden leads.
Measure for Measure, act iv., sc. 1.

(3) *Antonio.* The Prince and Count Claudio, walking in a thick-pleached alley in my orchard, were thus much overheard by a man of mine.
Much Ado About Nothing, act i., sc. 2.

(4) *Iago.* Our bodies are our gardens, &c.
(See Hyssop). *Othello*, act i., sc. 3.

(5) 1st *Servant.*
Why should we, in the compass of a pale,
Keep law, and form, and due proportion,
Showing as in a model our fair state?
When our sea-walled garden, the whole land,
Is full of weeds; her fairest flowers choked up,
Her fruit trees all unpruned, her hedges ruined,
Her knots disordered, and her wholesome herbs
Swarming with caterpillars.
Richard II., act iii., sc. 4.

The flower-gardens of Shakespeare's time were very different to the flower-gardens of our day; but we have so many good descriptions of them in books and pictures that we have no difficulty in realising them both in their general form and arrangement. I am now speaking only of the flower gardens; the kitchen gardens and orchards were very much like our own, except in the one important difference, that they had necessarily much less glass than our modern gardens can command. In the flower garden the grand leading principle was uniformity and formality carried out into very minute details. "The garden is best to be square," was Lord Bacon's rule and this form was determined on because the garden was considered strictly to be a purtenance and continuation of the house, designed so as strictly to harmonise with the architecture of the building. And Parkinson's advice was to the same effect:—"The orbicular or round form is held in its own proper existence to be the most absolute form, containing within it all other forms whatsoever; but few, I think, will chuse such a proportion to be joyned to their habitation. The triangular or three-square form is such a form also as is seldom chosen by any that may make another choise. The four-square form is the most usually accepted with all, and doth best agree with any man's dwelling."

This was the shape of Chaucer's ideal garden—

And whan I had a while goon,
I saugh a gardyn right anoon,
Full long and broad; and every delle
Enclosed was, and walled welle
With high walles embatailled.

. . . .

I felle fast in a weymenting
By which art, or by what engyne
I might come into that gardyne;
But way I couthe fynd noon
Into that gardyne for to goon.

. . . .

Tho' gan I go a fulle grete pas,
Environyng evene in compas,
The closing of the square walle,
Tyl that I fonde a wiket smalle
So shett that I ne'er myght in gon,
And other entre was ther noon.
Romaunt of the Rose.

This square enclosure was bounded either by a high wall—"circummured with brick," "with high walles embatailled"—or with a thick, high hedge—"encompassed on all the four sides with a stately, arched hedge." These hedges were made chiefly of Holly or Hornbeam, and we can judge of their size by Evelyn's description of his "impregnable hedge of about 400 ft. in length, 9 ft. high, and 5 ft. in diameter." Many of these hedges still remain in our old gardens. Within this enclosure the garden was accurately laid out in formal shapes, with paths either quite straight or in some strictly mathematical figures:—

> And all without were walkes and alleys dight
> With divers trees enrang'd in even rankes;
> And here and there were pleasant arbors pight,
> And shadie seates, and sundry flowering bankes,
> To sit and rest the walkers' wearie shankes.
> *Faerie Queene*, iv., 10, 25.

The main walks were not, as with us, bounded with the turf, but they were bounded with trees which were wrought into hedges, more or less open at the sides, and arched over at the top. These formed the "close alleys," "covert alleys," or "thick-pleached alleys," of which we read in Shakespeare and other authors of that time. Many kinds of trees and shrubs were used for this purpose; "every one taketh what liketh him best, as either Privit alone, or Sweet Bryer and White Thorn interlaced together, and Roses of one, two, or more sorts placed here and there amongst them. Some also take Lavender, Rosemary, Sage, Southernwood, Lavender Cotton, or some such other thing. Some again plant Cornel trees, and plash them or keep them low to form them into a hedge; and some again take a low prickly shrub that abideth always green, called in Latin Pyracantha" (Parkinson). It was on these hedges and their adjuncts that the chief labour of the garden was spent. They were cut and tortured into every imaginable shape, nothing came amiss to the fancy of the topiarist. When this topiary art first came into fashion in England I do not know, but it was probably more or less the fashion in all gardens of any pretence from very early times, but it reached its highest point in the sixteenth century, and it held its ground as the perfection of gardening till it was driven out of the field in the last century by the "picturesque style," though many specimens still remain in England, as at Levens and Hardwicke on a large scale, and in the gardens of many ancient English mansions and old farmhouses on a smaller scale. It was, in fact, doomed as soon as landscape gardeners aimed at the natural, for even when it was still at its height Addison described it thus:—"Our British gardeners, instead of humouring Nature, love to deviate from it as much as possible. Our trees rise in cones, globes, and pyramids; we see the mark of the scissors upon every plant and bush."

But this is a digression: I must return to the Elizabethan garden, which I have hitherto only described as a great square, surrounded by wide, covered, shady walks, and with other similar walks dividing the central square into four or more compartments. But all this was introductory to the great feature of the Elizabethan garden, the formation of the "curious-knotted garden." Each of the large compartments was divided into a complication of "knots," by which was meant beds arranged in quaint patterns, formed by rule and compass with mathematical precision, and so numerous that it was a necessary part of the system that the whole square should be fully occupied by them. Lawn there was none; the whole area was nothing but the beds and the paths that divided them. There was Grass in other parts of the pleasure grounds, and apparently well kept, for Lord Bacon has given his opinion that "nothing is more pleasant to the eye than green Grass kept finely shorn," but it was apparently to be found only in the orchard, the bowling green, or the "wilderness;" in the flower garden proper it had no place. The "knots" were generally raised above the surface of the paths, the earth being kept in its place by borders of lead, or tiles, or wood, or even bones; but sometimes the beds and paths were on the same level, and then there were the same divisions that we now use, as Thrift, Box, Ivy, flints, &c. The paths were made of gravel, sand, spar, &c., and sometimes with coloured earths; but against this Lord Bacon made a vigorous protest:—"As to the making of knots or figures with divers coloured earths, that they may lie under the windows of the house on that side on which the garden stands, they be but toys; you may see as good sights many times in tarts."

The old gardening books are full of designs for these knots; indeed, no gardening book of the date seems to have been considered complete if it did not give the "latest designs," and they seem to have much tried the wit and ingenuity of the gardeners, as they must have also sorely tried their patience to keep them in order; and I doubt not that the efficiency of an Elizabethan gardener was as much tested by his skill and experience in "knot-work" as the efficiency of a modern gardener is tested by his skill in "bedding out," which is the lineal descendant of "knot-work." In one most essential point, however, the two systems very much differed: in "bedding out" the whole force of the system is spent in producing masses of colours, the individual flowers being of no importance, except so far as each flower contributes its little share of colour to the general mass; and it is for this reason that so many of us dislike the system, not only because of its monotony, but more especially because it has a tendency "to teach us to think too little about the plants individually, and to look at them chiefly as an assemblage of beautiful colours. It is difficult in those blooming masses to separate one from another; all produce so much the same sort of impression. The consequence is people see the flowers on the beds without caring to know anything about them or even to ask their names. It was different in the older gardens, because there was just variety there; the plants strongly contrasted with each other, and we were ever passing from the beautiful to the curious. Now we get little of quaintness or mystery, or of the strange delicious thought of being lost or embosomed in a tall rich wood of flowers. All is clear, definite, and classical, the work of a too narrow and exclusive taste" (Forbes Watson). The old "knot-work" was not open to this censure, though no doubt it led the way which ended in "bedding out." The beginning of the system crept in very shortly after Shakespeare's time. Parkinson spoke of an arrangement of spring flowers which, when "all planted in some proportion as near one unto another as is fit for them will give such a grace to the garden that the place will seem like a piece of tapestry of many glorious colours, to encrease every one's delight." And again —"The Tulipas may be so matched, one colour answering and setting off another, that the place where they stand may resemble a piece of curious needlework or piece of painting." But these plants were all perennial, and remained where they were once planted, and with this one exception—the planting of knot-work was as different as possible from the modern planting of carpet-beds. The beds were planted inside their thick margins with as great a variety of plants as possible, and apparently set as thick as possible, like Harrison's garden quoted above, with its 300 separate plants in as many square feet. These were nearly all hardy perennials, with the addition of a few hardy annuals, and the great object seems to have been to have had something of interest or beauty in these gardens at all times of the year. The principle of the old gardeners was that "Nature abhors a vacuum," and, as far as their gardens went, they did their best to prevent a vacuum occurring at any time. In this way I think they surpassed us in their practical gardening, for, even if they did not always succeed, it was surely something for them to aim (in Lord Bacon's happy words), "to have *ver perpetuum* as the place affords."

Where the space would allow of it, the garden was further decorated with statues, fountains, "fair mounts," labyrinths, mazes, arbours and alcoves, rocks, "great Turkey jars," and such like things. These things were fitting ornaments in such formal gardens, but the best judges saw that they were not necessaries, and that the garden was complete without them. "They be pretty things to look on, but nothing for health or sweetness." "Such things are for state and magnificence, but nothing to the true pleasure of a garden."

Such was the Elizabethan garden in its general outlines, the sort of garden which Shakespeare must have often seen both in Warwickshire and in London. According to our present ideas such a garden would be far too formal and artificial, and we may consider that the present fashion of our gardens is more according to the type of Eden, in which there grew

> Flowers worthy of Paradise which not nice art
> In beds and curious knots, but Nature boon
> Poured forth profuse on hill and dale and plaine.
> *Paradise Lost*, book iv.

And none of us probably would now wish to exchange the straight walks and level terraces of the sixteenth century for our winding walks and undulating lawns, in the laying out of which the motto has been "ars est celare artem"—

> That which all faire workes doth most aggrace,
> The art, which all that wrought, appeareth in no place.
> *Faerie Queene*, ii., 12, 58.

yet it is pleasant to look back upon these old gardens, and to see how they were cherished and beloved by some of the greatest and noblest of Englishmen. Spenser has left on record his judgment on the gardens of his day—

> To the gay gardens his unstaid desire
> Him wholly carried, to refresh his sprights;
> There lavish Nature, in her best attire,
> Poures forth swete odors and alluring sights:
> And Arte, with her contending, doth aspire
> To excell the naturall with made delights;
> And all that faire or pleasant may be found
> In riotous excesse doth ther abound.
>
> . . . . . .
>
> There he amang round about doth flie,
> From bed to bed, from one to other border;
> And takes survey, with curious busie eye,
> Of every floure and herbe there set in order.
> *Muiopotmos.*

Clearly in Spenser's eyes the formalities of an Elizabethan garden (for we must suppose he had such in his thoughts) did not exclude nature or beauty.

It was also with such formal gardens in his mind and before his eyes that Lord Bacon wrote his essay on gardens, and commenced it with the well-known sentence (for I must quote him once again, for the last time), "God Almighty first planted a garden, and indeed it is the purest of all human pleasures; it is the greatest refreshment to the spirits of man, without which buildings and palaces are but gross handyworks; and a man shall ever see, that when ages grow to civility and elegancy, men come to build stately sooner than to garden finely, as if gardening were the greater perfection." And, indeed, in spite of their stiffness and unnaturalness, there must have been a great charm in those gardens, and though it would be antiquarian affectation to attempt or wish to restore them, yet there must have been a stateliness about them which our gardens have not, and they must have had many points of real comfort which it seems a pity to have lost. Those long, shady "covert alleys," with their "thick-pleached" sides and roof, must have been very pleasant places to walk in, giving shelter in winter, and in summer deep shade, with the pleasant smell of Sweet Brier and Roses. They must have been the very places for a thoughtful student, who desired quiet and retirement for his thoughts—

> And adde to these retired leasure
> That in trim gardens takes his pleasure.
> *Il Penseroso.*

And they must have been also "pretty retiring places for conference" for friends in council. The whole fashion of the Elizabethan garden has passed away, and will probably never be revived; but before we condemn it as a ridiculous fashion, unworthy of the science of gardening, we may remember that it held its ground in England for nearly two hundred years, and that during that time the gardens of England and the flowers they bore won not the cold admiration but the warm affection of the greatest names in English history, the affection of such a queen as Elizabeth, of such a grave and wise philosopher as Bacon, of such a grand hero as Raleigh, of such poets as Spenser and Shakespeare.

III. Gardeners.

> (1) *Queen.* But stay, here come the gardeners,
> Let's step into the shadow of these trees.
>
> . . . . . .
>
> Thou, old Adam's likeness,
> Set to dress the garden, how dares
> Thy harsh rude tongue sound this unpleasing news?
> What Eve, what serpent hath suggested thee
> To make a second fall of cursed man?
> Why dost thou say, King Richard is deposed?
> Dost thou, thou little better thing than earth,
> Divine his downfall?
> *Richard II.*, act iii., sc. 4.

> (2) *Clown.* Come, my spade—there is no ancient gentlemen but gardeners, ditchers, and gravemakers; they hold up Adam's profession.
> *Hamlet*, act v., sc. 1.

Very little is recorded of the gardeners of the sixteenth century, by which we can judge either of their skill or their social position. Gerarde frequently mentions the names of different persons from whom he obtained plants, but without telling us whether they were professional or amateur gardeners or nurserymen; and Hakluyt has recorded the name of Master Wolfe as gardener to Henry VIII. Certainly Richard II.'s Queen did not speak with much respect to her gardener, reproving him for his "harsh rude tongue," and addressing him as a "little better thing than earth"—but her angry grief may account for that. Parkinson also has not much to say in favour of the gardeners of his day, but considers it his duty to warn his readers against them—"Our English gardeners are all or the most of them utterly ignorant in the ordering of their outlandish (*i.e.* exotic) flowers as not being trained to know them. . . . . And I do wish all gentlemen and gentlewomen, whom it may concern for their own good, to be as careful whom they trust with the planting and replanting of their fine flowers, as they would be with so many jewels, for the roots of many of them being small and of great value may soon be conveyed away, and a clean tale fair told, that such a root is rotten or perished in the ground if none be seen where it should be, or else that the flower hath changed his colour when it hath been taken away, or a counterfeit one hath been put in the place thereof; and thus many have been deceived of their daintiest flowers, without remedy or true knowledge of the defect." And again, "idle and ignorant gardeners who get names by stealth as they do many other things." This is not a pleasant picture either of the skill or honesty of the sixteenth century gardeners, but there must have been skilled gardeners, to keep those curious-knotted gardens in order, so as to have a "*ver perpetuum* all the year." And there must have been men also who had a love for their craft; and if some stole the rare plants committed to their charge, we must hope that there were some honest men among them, and that they were not all like old Andrew Fairservice, in Rob Roy, who wished to find a place where he "wad hear pure doctrine, and hae a free cow's grass, and a cot and a yard, and mair than ten punds of annual fee," but added also, "and where there's nae leddy about the town to count the Apples."

H. N. Ellacombe.

Coffee.—Dr. Attilio Lelli having met with a case in which a dose of strychnia was administered in Coffee without fatal consequences, was, the "Lancet" says, led to institute some experiments to determine whether it possessed antitoxic power against this drug. The animals employed were rabbits, and by comparative trials he found that a dose of five centigrammes proved fatal in a short space of time; when the same or a larger dose was given in a very strong infusion of Coffee, he found that the Coffee either acted as a complete antidote in preventing the poisonous effects of the strychnia, or that it materially diminished the violence of its action.

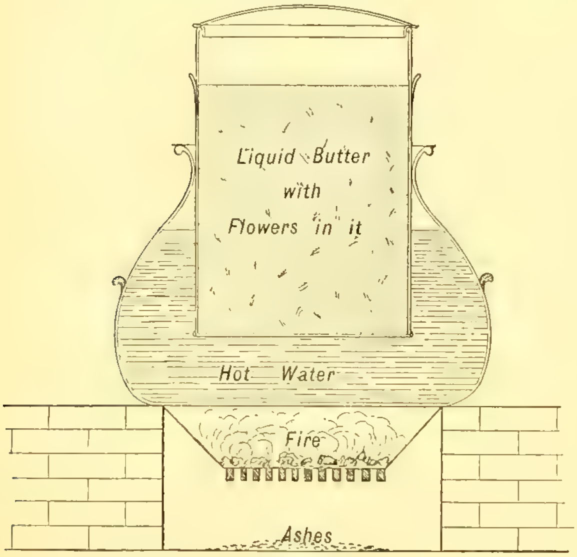
A Welsh Meadow.—During the last week in June Mr. James Britten and I spent three days in North Wales, sometimes walking, sometimes travelling by rail, from Llangollen to Dolgelly. Whilst at the latter place we took an evening stroll along a road leading to the foot of Cader Idris, and some three miles or more from Dolgelly we came upon a small meadow, certainly not more than an acre in extent, which appeared from the road to be almost covered with various kinds of Orchids. On a closer inspection, we found great quantities of Gymnadenia conopsea, Habenaria chlorantha, Listera ovata, and Orchis maculata, and such a profusion of many other pretty and some not very common plants, that we determined to search the place carefully, and for our own amusement to put down all the species we could find in this fertile little spot. The list soon became so large as to astonish ourselves. Probably there is scarcely another acre to be found containing not only so many species of wild plants, but so many individuals of certain species. It was the gayest little garden imaginable. At the time of our visit it was perhaps chiefly conspicuous for the Orchids and for the amazing undergrowth of Fairy Flax; but at various times other plants will be in the ascendant. The moister portions will by this time be yellow over with the fragrant Asphodel, and the drier parts will soon be blue with Scabious; whilst the pretty pink Pedicularis will give it a rosy tint. In all eighty species were counted, but we did not take into account the hedges or the trees. It likewise grew too dark to see any more, and we were obliged to give up our search, no doubt missing several species which would probably have brought up the list to very nearly one hundred.—Robeet Holland, in "Science Gossip."

SCENT-YIELDING PLANTS.

By G. W. SEPTIMUS PIESSE, Ph.D., F.C.S.

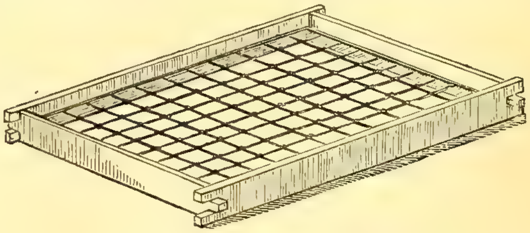
Cassie, Jasmine, Tuberose, and Violet.

I have grouped together the Cassie, Jasmine, Tuberose, and Violet, because their scent can only be obtained by the enfleurage and maceration processes. They are a type of nearly all scent-yielding flowers. Kill the flower by boiling it in a still and no odour can be obtained; it is only when the flower is alive that it gives out its scent. There is nearly always a certain amount of odour in pollen which, on being put into grease, imparts to it the scent of the flower from which the pollen is taken. The odour of the Hop flower seems to be wholly due to the profuse way in which it yields pollen. In order that the operations of inflowering and maceration should be more perfectly understood than by the brief description of the processes given in the article on "The Rose" (see p. 173), illustrations of the "Bain Marié" (used for macerating flowers) and the "Chassis en Verre et en Fer" (for inflowering fat and oil) are here given. For scenting grease with Cassie or Violet, it has to be treated by both processes: first by placing the flowers into the liquefied grease, an operation which must be repeated some ten or twenty times; then the grease has to be strained through muslin every day, and fresh flowers added, finally spreading the grease when cool on both sides of the chassis, and sprinkling flowers over it, changing them as often as may be convenient. When the blooming period is over, the grease is collected, slightly warmed, strained, and put into canisters for exportation. In obtaining scent from the Jasmine and Tuberose, the grease is inflowered only, as maceration in the case of these flowers deteriorates the product. They exhale odour for a long time when shut up in a grease box, for such it is when one chassis is placed upon another as they are in practice as seen in the illustration. If oil having the scent of these flowers be required, the wire gauze sash is used for the inflowering of oil upon a cotton fabric. As many as 3000 chassis are in use at one time in some laboratories.

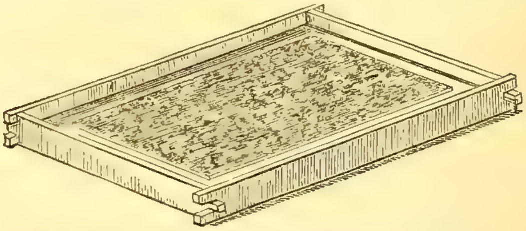


Section of Bain Marié, for macerating flowers.

Cassie (Acacia Farnesiana).



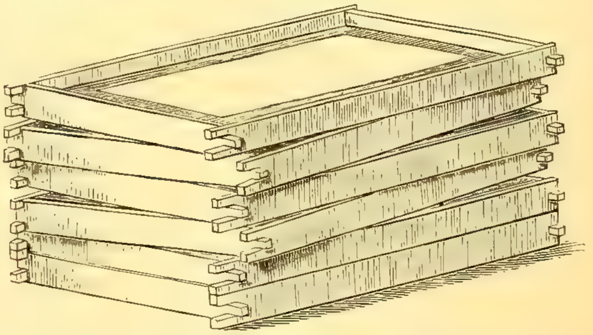
Chassis en fer, or wired frame for inflowering oil.



Chassis en verre, or framed glass for inflowering grease.

Cassie.

Let us now glance at the cultivation of these flowers as raised on the flower farms of the Var (Alpes Maritimes). The young plants of Cassie (Acacia Farnesiana) are raised from seed which is sown in beds, on which the best plants are left and the doubtful ones removed. In the third year they have generally reached a height of 2 ft. or 3 ft., and they are then planted out in fields, each tree requiring about 12 ft. square of land. Before planting the Cassie the ground is well dressed with manure, and deeply trenched. This plant thrives better at Cannes than in any other part of Europe. The blossoms of the Cassie are



Pile of framed glasses, with flowers between and grease at top and bottom.

successive, some being ready for plucking while others are scarcely formed; this is a great advantage to the cultivator, inasmuch as one lot of blossoms is gathered and passed through the laboratory before it is time to gather others. This Acacia begins to flower after the third year, and continues to grow till it reaches a height of from 12 ft. to 15 ft., with branches 6 ft. long, and a stem as thick as a man's wrist. Each full-grown tree will produce about 2 lb. weight of flowers, the value of which is from 3s. to 4s. per lb., say from £30 to £40 per acre. The annexed illustration of Cassie (p. 308) clearly shows the "successive" way in which it blooms. Flowers, however fragrant, are not of much practical use in the perfumer's laboratory unless they are produced in succession, because if they come altogether there is not sufficient time for the butter to be inflowered. It is found that better results are obtained by repeating a small quantity of flowers over the butter than by inflowering a large quantity of blossoms at one time.

Branch of the Spanish Jasmine (Jasminum grandiflorum): natural size.

Jasmine

is obtained by grafting the Spanish variety on two-year-old plants of the Wild Jasmine (Jasminum officinale), that which is seen in our English gardens. Spanish Jasmine thus treated produces a large blossom, the fragrance of which is intense. Jasmine needs a moist soil or to be so situated that it can be irrigated. It requires about 8000 plants to stock an acre, and they do not come into full bearing until the second year after grafting; the blossoms are produced from July to the end of October, but those of August and September yield the greatest amount of odour. Every August (the Jasmine season), the fields of the Var from Antibes to Cannes are alive about daybreak with women old and young, and children, each having a little basket suspended by a strap across the shoulders, both hands being actively engaged in picking blossoms. As each basket is filled it is conveyed to the shaded laboratory, and there weighed. An acre of land will yield about 500 lb. of blossoms during the season, the value of which is from £25 to £35. Fifty successive inflowerings of fresh blossoms occupying as many days produce the finest Jasmine butter.

Tuberose.

The Tuberose (Polianthes tuberosa), like nearly all the plants belonging to the same Order, grows best in moist situations, or if cultivated otherwise, the land must be irrigated. The bulbs are planted from 9 in. to 12 in. apart in rows 24 in.

asunder, and a good plantation in suitable soil will last from seven to eight years. As to its odour, who is unacquainted with it? The poet says "it comes out when the sun's away," referring doubtless to the marked exhalation of fragrance which takes place before sunrise. The enfleurage laboratory is always kept dark, an artificial inducement (may I say?) for the blossoms to "work hard."

Violet.

As to Violets in England, they grow anywhere and almost anyhow; but the fierce sun at Nice is but ill borne by them; consequently cultivators plant them under the shade of the Orange and Lemon trees which abound there, or close to walls and houses. They are propagated by division, and after the young plants are set out and well established they receive a good supply of liquid manure, which has to be repeated every year about two months before they begin to blossom. If the soil be very dry the plants should be irrigated every week during the hot season. Violets are planted so as to grow in tufts or clusters about 1 ft. apart all round; this space enables the garnerers to pick the flowers without treading upon the plants. Old plantations have to be removed about every five years, and young roots substituted, planting this time in the spaces which before were vacant. An acre of land during a season at Nice will yield from 180 lb. to 200 lb. of flowers, the value of which is from 1s. 6d. to 2s. per lb. Violets may be looked upon as an under crop, as they succeed under trees. The variety best suited for yielding scent is the double Parma. About 25 tons weight of Violet blossoms are produced annually at Nice.

Hughenden House, Chiswick.

THE INDOOR GARDEN.

WINTER-FLOWERING PLANTS.

There is no season of the year when flowering plants in conservatories or other glass structures are more appreciated than in winter, and yet many are deterred from attempting their culture because they imagine that a temperature suitable for stove plants is necessary for them, while in point of fact a too high temperature shortens their period of blooming. There is no reason why any one having a glass house in which the temperature of an ordinary dwelling room can be maintained should not enjoy a fine display of flowers in winter as well as in summer. The temperature of our conservatory, which is, as a rule, gayer with flowering plants during winter than in summer, is frequently as low as 40° on sharp frosty nights, and the average night winter temperature ranges from 45° to 50°, yet a large and varied collection, or rather selection, of plants is maintained in it in perfect health as long as they are required, or until their flowers fade and they are removed to make room for successional subjects. There is now such a wealth of exotics that flower naturally during winter that any additions to them might seem superfluous, but there are, nevertheless, a few useful groups of plants that may be made available for such purposes, either by hastening or retarding their growth, that a few notes on the most serviceable may not be out of place at the present time.

Pelargoniums.—Whilst our flower beds and borders are aglow with these, one fancies that we could not appreciate them again under glass, but from October to May Pelargoniums are amongst the most effective conservatory plants which we possess. Our winter stock of them, now ready to burst into flower, has been prepared as follows:—In March the required number of plants was selected from amongst those that had been cut in close the previous autumn, and which were consequently bushy plants, well furnished with side-shoots; these were potted in 7-in. and 8-in. pots, using a compost consisting of loam, rotten manure, and sharp grit. They were then set in a light, span-roofed pit, where an intermediate temperature was maintained, and as soon as they had become vigorous the principal shoots were tied down to the rim of the pot and the points pinched, with the view of inducing bushy growth. When the external temperature admitted of their removal without checking their growth, they were transferred to cold pits and placed close to the glass. Their summer treatment consisted in giving abundance of water at the root, and a sprinkling after hot days amongst the pots in order to keep the coal-ash foundation cool and moist; a slight shade was given during the brightest portions of the day; the flowers were kept constantly removed, and the strongest of the shoots were pinched off to induce the formation of a well-furnished head of well-ripened side-shoots, which will, as soon as the pinching is discontinued, produce a display of the finest bloom, equal, if not superior, to any summer effects which are generally obtained from Pelargoniums. They must be allowed at all times abundance of air; the lights should only be used for warding off heavy rains, and should be entirely drawn off in fine weather up till within a month of the season when the plants are required to be in bloom, when stopping must be discontinued and a drier atmosphere maintained; but root moisture must still be applied in sufficient quantities to ensure a healthy development of fine foliage and sturdy spikes of flower that will, in the light, dry, buoyant atmosphere of the conservatory, last in perfection several weeks. Successional plants from spring-struck cuttings should be kept as cool as possible in order to permit them to husband their strength until required. As regards varieties, I find those of the Vesuvius type, of moderately strong growth, and of a floriferous character in summer, to be equally effective in winter; Dr. Denny's well-known varieties, too, and Mr. Pearson's, include all shades, from pure white to the most brilliant scarlet.

Chinese Primulas.—To have these in perfection from October onwards the seed should be sown in February in light, rich soil, and placed in a moderate heat. They should be pricked off as soon as they are large enough to handle, and finally potted according to the size of the specimens required. In summer their treatment consists in shading from strong sunlight, strict attention to watering, preserving a cool, damp foundation, and keeping all flower-spikes pinched out until September, when good plants will throw up from five to seven spikes of flower, and form a perfect ball of blossom and foliage. Such specimens make excellent plants for vases, or for conservatory decoration; not the least of their many good properties being that they are even more effective under artificial than solar light. We have at present coming into bloom Russell's Pyramid (red and white), P. sinensis fimbriata, rubra and alba, P. sinensis Cottage Maid, P. filicifolia, (red and white), P. fimbriata striatiflora, and P. sinensis punctata elegantissima.

Salvias.—These are invaluable for furnishing large conservatories, as their brilliant blossoms, produced in the greatest abundance, give a cheerful effect in winter, and contrast well with the large masses of foliage usually employed for furnishing such structures. We propagate a supply of young plants in March, and grow them on in moderate heat until the external atmosphere admits of their being gradually hardened off in cold frames, and by the beginning of June they should be fine bushy plants ready for shifting into flowering pots, the size of which is regulated by the size of plant required. For large specimens for central beds we use 12-in. pots, employing a rich compost; they must receive some temporary shelter until they have become well established, when they may be set in the open air, where they are sheltered from rough winds. Plenty of root moisture with occasional applications of liquid manure should be regularly given them, and they like a good syringing after hot days, to keep off red spider, which is their greatest enemy. Treated in this manner, S. splendens is now coming into bloom, and will continue in that condition under conservatory treatment until Christmas or even later, when S. Heeri will be fit to take its place. This will be succeeded in March by S. gesneræfolia, a dwarf variety with stout foliage and brilliant blossoms. When coming into flower, a good top-dressing of sheep or cow manure will keep the growth healthy and vigorous, and few plants are less troubled with insect pests.

Tree Carnations.—These are grown both for ordinary purposes, and for furnishing cut flowers, which are extremely useful for bouquets or general decorative purposes. Spring-struck plants in medium-sized pots are best; they should be grown in the open air after they are established in their blooming pots. By the end of September, the earliest of them will be coming into bloom, and may be removed under glass in succession. A cool, rather dry atmosphere suits them best, as damp soon spoils their blossoms. We find Miss Jolliffe (pink), Garibaldi (scarlet), La Belle (white), and Vulcan (bright red), to be amongst the best for winter; and Souvenir de la Malmaison (extra large, blush-white), to be the best for the early spring months.

Calla æthiopica.—This invaluable plant is greatly benefited by being planted out during the summer months in good rich soil. It delights in abundance of moisture at the root, and, in fact, it succeeds well as an aquatic. It should be lifted carefully and repotted in September, when the most forward amongst them will be showing flower. They should be placed in a cold pit and introduced as required to the conservatory, where the white flowers or spathes and highly ornamental foliage render them effective subjects. They are not liable to insect-pests, and are easily increased by means of offsets or small bulbs that form at their bases. I find them to answer best confined to a single crown in a pot. Care should be taken to get a stock that produce fine flowers; for amongst them there are some with narrow-pointed leaves that produce small flowers even in the case of strong plants, while the broad-leaved section as a rule produce flowers of good form and substance.

Cyclamens.—No collection of winter-flowering plants can be called complete if these be not abundantly represented. They are so easily raised from seed, and produce such fine-flowering bulbs the second year, that it is desirable to continually remove all second-rate flowering bulbs, and only retain the best. Cyclamens have been greatly improved during these last few years, and therefore care should be taken to get seed from a good stock. We do not dry off their bulbs at any time, but during their dormant season they are placed in a partially-shaded frame on a coal-ash foundation until they commence to grow, when they are removed to a light, airy shelf, and introduced in succession to their flowering quarters.

Cinerarias.—These may be had in full bloom by the beginning of December by sowing the seed in February, and treating the young seedlings as one would do Primulas. Cinerarias will not stand forcing in their later stages of growth, therefore early preparation must precede early blooming. If kept cool they are seldom troubled with insects, but in heated structures they soon become infested with green fly.

Epiphyllums.—These are handsome plants when in flower, the season of which may be prolonged through the dullest part of the year, viz., from early in November to the New Year. After flowering we usually keep them comparatively dry and cool until March, when they are potted if necessary and placed on a shelf in the forcing-house where a high moist atmosphere is maintained. Under these conditions they make vigorous growth, and by the end of July they may be removed to a cool airy position and kept moderately dry. By introducing them to heat again in succession from the first of September onwards, a long display of the flowers produced by this beautiful succulent may be relied on.

Chrysanthemums.—For ordinary decorative purposes these are struck early in spring, and grown on under glass until they are fit for transferring to their flowering pots, when they are plunged in coal ashes up to their rims to prevent evaporation. Good drainage is an essential part of their treatment, for if sodden the plants perish suddenly, while on the other hand any lack of moisture causes them to lose their foliage at the base, and unless well furnished with deep green leaves Chrysanthemums, however well flowered, are comparatively useless for decorative purposes. A position with a south aspect and sheltered from wind suits them admirably. Pompones from their dwarf bushy habit require no stakes, but the large-flowered kinds so effective in floral decorations require a stake to each shoot in August, after which they will form a natural-looking bush. As it is desirable to prolong the season during which they flower as late as possible, they should only be removed under glass as they come into bloom, or when danger from exposure is apprehended. A cool airy orchard-house suits them admirably, the dry cool atmosphere preserving the blossoms for a long season.

Begonias.—Many of the free-flowering varieties form excellent plants if grown freely during the early summer months, and rested in August in a cool situation; the blooms should be pinched off up to September, when a slightly increased temperature will start them into vigorous growth, and a fine display of flowers will be the result. Although usually treated as stove plants, they will continue in good health for a lengthened period in an intermediate-house. James Groom.

Henham.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

October 1.—Potting old plants of Cloth of Gold, Golden Chain, and Flower of Spring Pelargoniums for stock. Putting in cuttings of Blue Perfection and Golden Gem Viola in sharp sandy soil, under hand-lights, in a shady border. Putting Fraser's Broad-leaved and Green Curled Endive in cold pits as they become vacant; also black-seeded Brown Cos Lettuce. Giving Strawberry beds a good coat of manure, and forking it in. Getting border under north wall ready for Calceolaria cuttings. Taking up one portion of Beet-root, and storing it away for use in case of frosty weather. Gathering Coe's Golden Drop and Reine Claude de Bavay Plums. Watering Pine-Apples throughout, and tying up the fruit where necessary.

Oct. 2.—Putting in Calceolaria cuttings under hand-lights against a north wall. Getting Camellias, Myrtles, and other plants under cover. Earthing up Celery when the ground is dry and in workable condition. Cutting off what bunches are left in late Black Hamburgh house, and putting them in bottles of water in which have been placed a few pieces of charcoal. Gathering Louise Bonne of Jersey, Jersey Gratioli, and Marie Louise Pears; also Cellini, Cox's Pomona, and Stirling Castle Apples, and laying them singly on clean wheat straw in fruit room. Weeding Box edging, and cleaning the garden walks to make them fresh for the winter.

Oct. 3.—Potting rooted cuttings of Tomatoes for succession; and putting in another batch of Hathaway's Excelsior. Clearing off old Peas, and getting the ground ready for manuring and trenching. Hoeing and weeding amongst the autumn-sown Onions whilst the ground is dry and the weather fine. Turning gravel walks, and laying down new where required. Tying up Lettuces, and covering up Endive to blanch. Clearing off all decayed vegetables, and carrying them to the rubbish-heap to burn. Gathering Passe Colmar, Doyenné du Comice, Forelle, and Flemish Beauty Pears.

Oct. 4.—Potting Flower of Spring and Dr. Lindley Pelargoniums; also Hyacinths, Tulips, and Narcissi. Moving Primulas and Cinerarias to warmer quarters. Thinning Spinach, and weeding and hoeing between the rows. Making a new Mushroom bed, and turning more manure for another. Looking over all Cauliflowers, and turning down the leaves over such as have formed heads, to protect them from frost. Gathering all Dwarf and Scarlet Runner Beans, and putting them in 4-in. flower pots, set in pans of water with a little charcoal added for keeping till they are wanted; also treating all Vegetable Marrows in the same way.

Oct. 5. — Potting Christine and Jean Sisley Pelargoniums; also a quantity of Echeveria glauca. Planting all spare borders with Wheeler's Imperial Cabbage plants 8 in. apart. Preparing temporary frames in which to prick out Cauliflower plants; also a quantity of black-seeded Brown Cos Lettuce. Giving late Peach-house inside border a good soaking with water.

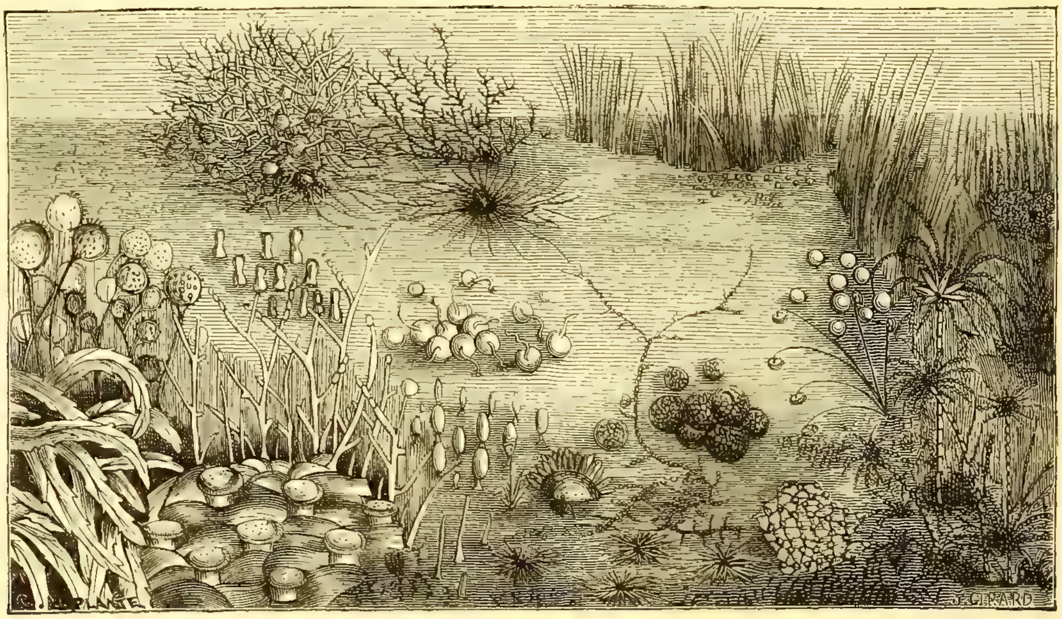
Oct. 6.—Sowing Mustard and Cress in boxes placed indoors. Potting a few Lobelia pumila and dwarf Ageratums. Putting in Calceolaria cuttings under hand-lights. Getting up a large quantity of the most forward Cauliflowers, and laying them in an open shed. Clearing leaves from the pleasure grounds and walks, and rolling the same. Gathering all unripe Tomatoes, and placing them in a sunny position indoors to ripen. Fruits in use for dessert consist of Pine-apples, Grapes, Pears, Plums, and Apples.

Railway Planting.—The Central Pacific Railroad Company are doing a good work in tree planting, having already planted 40,000 Eucalyptus trees along the line of their road. This enterprising company intend, according to the "American Naturalist." planting certain species of the Eucalyptus on each side of their right of way through some 500 miles of the valleys of California; it is estimated that 800,000 trees will be required for this purpose.—R. E. C. S.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Bulbs should now be potted without delay, especially those that are required to be in bloom early. Amongst Hyacinths, the small White Roman is the best for early flowering; and of Narcissi, the Paper White is the best early, to be succeeded by the ordinary large-flowered Hyacinths and Narcissi. The bulbs of Hyacinths collectively are inferior in quality this season through the adverse weather experienced during the time they were making their growth; but, from the appearance of the roots, some kinds have been much more affected than others; consequently I should recommend amateurs to order or select only the freest-growing varieties, as many of the more delicate sorts will this year be liable to cause disappointment. To counteract as far as possible this weak condition of the bulbs, even of the mid-season and late-flowering varieties, they should be potted sooner than usual, and not kept out of the soil after they have evinced a disposition to grow (which is shown by the prominence of the roots), for when allowed plenty of time between potting and being placed in a warm temperature to bring them into flower, it gives time for the pots to become filled with roots, which is most essential to success in the case of all bulbous plants. Crocuses, Tulips, Snowdrops, and the beautiful blue Scillas should all now be potted. The best place to keep them in until they are ready for placing in heat is a bed of ashes, with 2 in. or 3 in. of the material under the pots to keep out worms, filling it in betwixt them and over the tops to a depth of 4 in. or 5 in.; whilst here, the soil should be kept moderately moist, but not saturated. Should the weather be very wet, one or two hotbed lights or shutters may be placed over them in a sloping position, to throw off the rain. Hyacinths and other bulbs for forcing do not require so much root-room as they often receive; I have found that two or three bulbs in a 7-in. pot flower equally well as if they were put in separate pots. Plump, well-matured bulbs, the pots well filled with roots, gradual forcing, and plenty of light as soon as the crowns have got fairly inured to it, are the essentials to secure fine, stout flowers. Where the leaves and bloom-stems are of a drawn-up, weakly description, it is evident that some of the foregoing requisites have been wanting.



Minute Vegetation (see p. 313).

Root-pruning Fruit Trees.—There is scarcely a single operation in gardening during this exceptional season which it has not been necessary to delay later than usual; and amongst the rest, root-pruning. In ordinary springs, when the weather enables the growth of the trees to commence at the usual time, and is sufficiently genial afterwards to cause it to make favourable progress, root-pruning is best carried out in the beginning of September; but in most cases this year the summer shoots have not completed their extension until a month later, consequently it is necessary to defer the work. Like almost every other operation connected with gardening, root-pruning does not admit of universal application, not even in the case of such trees as from their over-luxuriant condition form few or no bloom-spurs, with a consequent absence of fruit. There are some growers who object to root-pruning, arguing that it is better to take up the trees and re-plant them; this may be quite correct in the case of small bush-shaped Apples, and pyramidal or bush-shaped Pears, the size of which will admit of their thus being taken up and re-planted without much mutilation of the roots, or a great amount of labour involved in their removal; but by far the greater number of trees, not only grown by amateurs, but in gardens generally that are in an unsatisfactory, unfruitful condition, have often been allowed to remain until they have attained a height of at least 12 ft., and almost as much through; and although it is quite possible to transplant them, still it is far from advisable to do so when there is no further object in view than simply to bring them into a bearing state. It is more particularly to trees of this latter description that these remarks are intended to apply. Then, again, as to the method of operating upon the trees; here also size and the circumstances under which they are grown must to a considerable extent influence the mode of procedure. With comparatively small trees that have not been many years planted it will generally be found the best to remove the soil from above their roots, commencing at from 2 ft. to 2½ ft. from the bole, and to follow them to near their extremities, shortening them to within 4½ ft. of their whole length, spreading them out evenly in the trench that will have been made in getting to them, and keeping them well up towards the surface, filling the soil in evenly all round, and treading it firmly down as the work proceeds. The direction thus given to the roots in keeping them within 1 ft. of the top has the best possible effect upon the future health and bearing capabilities of the trees, as the roots lying comparatively near the surface are under the influence of the sun-warmed earth, which during the summer is necessarily in that dry condition which causes a cessation of wood growth, and induces the formation of fruit-spurs to an extent that cannot possibly occur when the roots are deeper down in the moist subsoil. In the case of any trees that exhibit more than usual vigour, producing thick rank shoots, it will be well, whilst the trench is open, to remove the soil right under the centre of the undisturbed ball to see if there be any strong roots descending in a vertical direction; if any be found they should be cut away for whilst these strong tap roots exist, medium-sized trees never can be induced to bear. Larger trees in an unfruitful state such as already alluded to, and which may have been planted ten or a dozen years, or even more, without ever having their roots pruned or brought nearer the surface, will require to be treated somewhat differently. The roots of these will in most cases have extended a considerable distance, and in gardens where there is what may be termed a mixed cultivation, vegetable crops will be growing on the ground occupied by these roots; in which case it will not be found convenient to remove the soil and follow them to their extremities in the way recommended for smaller examples. Therefore a trench 15 in. or 18 in. wide should be opened on each side of the tree so as to go about half round it, at a distance, according to its size, of from 3 ft. to 5 ft. away from the bole: the larger the tree the further it will be necessary to open the trench from the bole, and that for two reasons—(1) if the roots of a large tree be cut in closely, the tree will not only be liable to displacement by the wind, but the severance of the roots too near the trunk would be so severe in its effects as to injure its health; for this reason I have found it better to reduce the roots one-half at a time as previously described; (2) if the growth be not restricted, and a sufficiently fruitful disposition secured by this first operation, then the remaining roots on the two opposite sides of the trees will require to be operated upon in the ensuing year, or at a further interval, according to the requirements of the case. In opening the trench, it is necessary to dig as deeply as the horizontal roots, and also to work under the ball and cut back any that descend more directly downwards. In shortening the roots, never leave them in a jagged, mutilated state—such as will be the case where they are chopped off with the spade—but make a clean cut with the knife: so far as possible, a fork should be used for the removal of the soil, especially with the smaller trees, where the object is more to bring the roots near the surface than to effect the greater reduction in their length. Plum and Cherry trees may be similarly treated; but it seldom happens that they are inclined to such an over-luxuriant growth that their roots become so strong as to induce an unfruitful disposition in the trees, and if taken in hand before they are too large, lifting them, so as to keep the roots near the surface, will be found the best mode of treatment for those in small gardens: this also applies to Apple and Pear trees. I cannot too forcibly urge the necessity for this root-lifting and the more severe operation of root-pruning being carried out with as little delay as possible after the present time; for where the work is done whilst the leaves are yet green, and have considerable vitality in them, I have found it not only much more effectual in inducing the formation of fruit-spurs the following autumn, but it also rarely exercises any injurious effects upon the health of the trees. The reason of this will be obvious to all who have had any experience in fruit culture, as when the operation is performed some weeks before the leaves fall, the healing up of the severed roots is greatly assisted, and the formation of new root-fibres is at once promoted: it is where root-pruning is deferred until the winter is far advanced that injury is inflicted. By way of experiment I have tried root-pruning as late as when the buds had begun slightly to swell, and the weakening influence of such treatment was so great that the trees did not recover their necessary vigour in less than two or three years. I would also impress upon amateurs that the larger and stronger the trees are, the greater the necessity for completing the work early. It will be seen that these directions only apply to fruit trees grown in gardens more or less devoted to the cultivation of culinary vegetables, where the manure used for the latter has a considerable influence in producing the over-luxuriant condition of the trees, which can seldom be induced to bear satisfactorily without either lifting or root-pruning, until they have become too large for ordinary gardens. In orchards which are dug annually, and where intervening crops, such as vegetables and bush fruits, are grown between the trees, it is often necessary to resort to root-pruning, as the trees, when kept within a moderate size, and their branches sufficiently thinned out, bear finer fruit than that produced where they are allowed to grow to their natural dimensions without restraint.

Moulds and other Minute Vegetation.—Besides the innumerable and infinitely varied forms which are presented to us by the higher forms of vegetable life, there is another and scarcely less beautiful world of plant-form which is almost concealed from the ordinary observer on account of the minute size of its members, or, when seen, presents itself in no ornamental guise. We refer to the vast group of minute, or, as they have been termed, microscopic, fungi, which present under the microscope forms of marvellous beauty and exquisite colouring. How varied is their form when thus regarded the illustration on the preceding page feebly portrays; but it cannot convey any idea of the rich colouring which microscopic fungi frequently present. Besides such important members of this class as the Peronospora infestans, which is the cause of the too well-known Potato disease, the "rust" and "smut" which the farmer dreads in his Wheat fields, or the "mildew" which suggests to the housewife a vision of damp linen and to the agriculturist and the Hop-grower a form of plant-disease, the "Vine-blight," the "orchid-blight," and many more—we shall often find in our spring rambles the underside of a Violet-leaf covered with round orange spots which, when examined under the microscope, present a most beautiful appearance. The infinite variety of these objects, which may be found in all sorts of situations—not only upon the leaves of living plants but upon dead twigs, upon straw, or on decaying stems—render them readily available for microscopic examination, and their beauty and curiosity make them well worthy of more notice than they generally receive.

THE EUCALYPTUS IN ALGERIA.

Consul-General Playfair has forwarded recently from Algiers a report in which he states that he has been greatly impressed with the disastrous consequences of the destruction of forests in Tunis, and has given much attention to the *reboisement* of Algeria, where the same process has been going on, though not to the same extent. At the time of the conquest the whole of the Sabel and a great part of the Mesidja were covered with wood or scrub, which acted not only as a parasol to the earth, preventing the undue evaporation of its dampness, but as a means of attracting and condensing the moisture in the atmosphere, and causing it to descend in refreshing dews or rain. But the clearings and destruction of forests which began about 1845, soon had the effect of changing the climate appreciably, and the rainfall has seriously decreased. The plantation of Australian trees is the most eligible course to be adopted as a remedy; and the Eucalyptus especially, because, while growing with great rapidity, and attaining in Algeria in six or seven years the same dimensions as the Oak does in twenty, it produces at the same time hard and dense timber, and may be expected in its twentieth year to furnish such logs of timber for ship-building or other purposes as could not be furnished by an Oak tree under 100 years old. Consul Playfair mentions that a short time ago, wishing to send a Eucalyptus tree of four or five years of age to England for experiment, he found that its great length made it impossible to put it into a boat to convey it to the steamer, and the boatman decided on towing it alongside; but the moment he put it into the sea it sank to the bottom, and divers had to be employed to raise it. When properly seasoned, its specific gravity becomes less, and it then floats on the water. The Consul states that the plantation of these trees on appropriate soil in Algeria will yield a large profit. There may be also parts of Europe where they could be cultivated as well as in Algeria, but that is very doubtful, and hardly anywhere is the price of land moderate enough to allow of their being grown with a certainty of profit. As a rule, wherever the Orange tree flourishes so does the Eucalyptus. There is no doubt of its action in improving the sanitary condition of unhealthy districts, and in dissipating miasmatic influences, which made such havoc among the Algerian colonists in the first years after the conquest. Formerly it was impossible for the workmen at the great iron mines of Mokta-el-Hadid to remain there during the summer; those who attempted to do so died, and the company was obliged to take the labourers to and from the mines by train every morning and evening, 33 kilos. each way. From 1868 to 1870 the company planted more than 100,000 Eucalyptus trees, and now the workmen are able to live all the year through at the scene of their labour. Other places are mentioned in which fever has disappeared since the introduction of these trees. They destroy miasma by utilising the moisture of the soil, and thus draining marshes. The emanations from their leaves also may produce a salutary effect. They contain a large quantity of essential oil very similar to turpentine, which they emit freely, especially when stirred by the wind, and this acts, it is supposed, as a febrifuge. The Consul is convinced that no culture in Algeria offers such prospects of success as Eucalyptus, if the cultivator can afford to wait for a certain considerable time for the return of his capital; but the land must be selected with due care and judgment. The Government now encourages its plantation, and offers to share the expense with the communes.

Antirrhinums or Snapdragons.—One of the brightest spots in my garden is that occupied by a batch of Snapdragons. The plants, which are dwarf and bushy, the first year of blooming are loaded with flowers, and by picking off the seed-pods they may be induced to throw up fresh growths and spikes of flowers for a long time. Antirrhinums, though perfectly hardy, do not winter well; last winter the excessive rainfall killed a great many one-year-old plants; hence the necessity for securing select varieties by means of cuttings.—D.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE FRUIT SHOW.

September 21 and 22.

This exhibition was in all respects a good one; fruit, cut flowers, and vegetables were shown in large quantities, and the arrangements were such as showed off the exhibits to the best advantage. Amongst the chief features of the show may be mentioned a large collection of Apples and Pears from the Royal Gardens, Frogmore, by Mr. Jones: and banks of cut Roses from Messrs. William Paul & Sons, Waltham Cross, and Messrs. Cranston & Co., Hereford. First-class Certificates were awarded to Mr. Turner, Royal Nurseries, Slough, for Seedling Dahlias, Charles Lidgard, and Lady Golightly; also for Potato, Schoolmaster, evidently a fine kind. To Messrs. Kelway & Sons, Langport, Somerset, for Seedling Gladioli, Marcianus, John Laing, Venulus, and Richard Dean. To Mr. Todd, Catterick Bridge, Yorkshire, for Seedling Dahlia, Rose Circle. To Mr. Keynes, Salisbury, for Seedling Dahlias, Robert Burns, Dictator, Emulator, and Marion. To Mr. Betteridge, Chipping Norton, for a Seedling Quilled Aster called Novelty; and to Messrs. Rawlings, Romford, for Seedling Dahlia, James Willing.

Fruit.—In the class of collections of twelve varieties of fruits, there were three competitors, all of whom sent excellent examples; but the best came from Mr. Coleman, Eastnor Castle. It consisted of fine Muscat of Alexandria and Black Hamburgh Grapes, Barrington Peaches, Pitmaston Duchesse Pears, good Melons, Plums, and Cherries, and two well-ripened Pine-apples. From Mr. Webb, gardener to J. H. Manners Sutton, Esq., also came good Alicante and Muscat of Alexandria Grapes, Figs, and Victoria Plums. The next collection contained good specimens of Hughes' Golden Pippin Apple and Beurré Superfin Pears. In the class of six varieties, the principal exhibits of note were well-coloured Alicante Grapes and Pine-apple Nectarines. In the class of ten varieties of Grapes, there were only two exhibitors, Messrs. Lane & Son, Berkhamsted, being first; they showed remarkably well-finished clusters of Bowood Muscat, Trebbiano, Alicante, Black Prince, and others. Mr. Wildsmith, gardener to Viscount Eversley, Heckfield, furnished very large bunches of Barbarossa, good examples of Venn's Black Muscat, and Alicantes, all well-ripened. In other classes devoted to Grapes we noticed fair examples of Golden Champion from Mr. Woodbridge, Syon House; also good Muscat of Alexandria and Madresfield Court. The best bunches of Black Hamburghs came from Mr. Adams, gardener to the Rev. R. Hudson, Frogmore Hall, who contributed large and shapely bunches. in which the berries were plump and well coloured. In the same class—that of three bunches of Black Hamburghs—Mr. Wildsmith had also good examples. Mr. Upjohn had smaller clusters, but well coloured. Of White Grapes, which were well represented, the best came from Mr. Coleman, gardener to Earl Somers, Eastnor Castle, who had very large and well-ripened bunches of Muscat of Alexandria; and fine bunches of the same variety were also shown by Messrs. H. Lane & Son. Madresfield Court was shown in good form by Mr. Earp, gardener to J. S. Sellon, Esq., and Mr. Woodbridge, but those furnished by the latter were not quite ripe. Three excellent bunches of Foster's Seedling came from Mr. Stephenson (gardener to F. Peek, Esq., Roby House, Sydenham) and Mr. Miles, Wycombe, the berries in both cases being of a rich golden transparent colour. Lady Downe's Seedling was largely shown, but most of the bunches were unripe. The best Buckland's Sweetwater which we have seen this season came from Mr. Bungay, gardener to W. Smith, Esq., Herne Hill, the berries being large and of a beautiful golden colour. Excellent stands of Alicante were shown by Messrs. Lane & Son, and Mr. Peed, Norwood. The heaviest bunch of Grapes (Syrian) came from Mr. J. Dickson, gardener to J. Jardine, Esq., Arkleton, and weighed 10 lb. 10 oz.; the next heaviest was a bunch of Barbarossa, from Mr. Peed. The best Queen Pine-apple out of eleven exhibited came from Mr. Webb; it weighed 6¼ lb., and was in perfect condition. An excellent fruit of this variety was also shown by Mr. Day, Hillside, Newark. A good Smooth-leaved Cayenne came from Mr. C. Ross, Welford Park, Newbury; and a well-finished ripe fruit was furnished by Mr. Pragnell, Sherborne Castle, Dorset. Peaches and Nectarines were shown in considerable numbers; the best dish of Peaches (Lord Palmerston) came from Mr. A. Gibson, Sevenoaks. A good dish of Barringtons came from Mr. Frost, Maidstone, and Princess of Wales was shown in good condition by Mr. J. Fry, gardener to J. Baker, Esq., Pinner. Of Royal George good dishes were shown by several exhibitors. Among Nectarines the best were Prince of Wales, from Mr. Jamieson, gardener to Earl Crauford, Wigan. Hunt's Tawny, a pretty dark-coloured kind, came from Mr. S. Bolton, and good examples of Oldenburg, Pine-apple, and Violette Hâtive were also shown. Melons were exhibited in large quantities; the best scarlet-fleshed kind (Scarlet Gem) came from Mr. Goldsmith, Dorking; Mr. Coleman had the next best (Read's Scarlet) in good form and beautifully netted. The best green-fleshed Melons came from Mr. R. Adams of Frogmore Hall, Mr. Coleman, and Mr. John Day. Figs were shown in unusually good condition; the largest fruit of White Marseilles which we have seen this season came from Mr. Burnett, gardener to Mrs. Hope, The Deepdene, Dorking, and of Brown Turkey and Brunswick there were also good dishes. Morello Cherries were shown in good condition by several exhibitors, the fruit being large, bright, and well ripened. Of Plums a fine dish of Green Gages came from Mr. J. Fry, and a very fine dish of Coe's Golden Drop was furnished by Mr. Staples, gardener to H. Oppenheim, Esq., Chipstead, Sevenoaks. Pond's Seedling, from Mr Walker, Thame, and from Mr. J. Bolton, gardener to W. Spottiswoode, Esq., Maidstone, obtained second and third prizes. Good fruit of Transparent Gage, White Magnum Bonum, Diamond, and Jefferson's were also shown. Apples, both culinary and dessert kinds, were shown in fairly large numbers, notwithstanding the almost general failure this year of that fruit. The best three dishes of dessert kinds came from Mr. Haycock, gardener at Barham Court, Maidstone; they consisted of remarkably finely-coloured fruit of the Melon Apple, Cox's Orange Pippin, and Ribston Pippin; the next in point of merit came from Mr. Rutland, Goodwood, who had good, even fruits of Ribston Pippin. Kitchen Apples made a fine display, owing to large dishes of each kind being shown; and several extra prizes had to be awarded in consequence of the equality of the collections. The best three dishes came from Mr. Bowles, gardener to W. Skinner, Esq., Beresford House, Maidstone, who had very large specimens of Warner's King, Stone Apple, and Lord Suffield; the next best collection was that shown by Mr. Rutland, who had Lord Suffield, Blenheim Orange, and Warner's King, all in good condition. In other collections the most noteworthy kinds were large, clean fruits of Stirling Castle, Gloria Mundi, and Emperor Alexander. Pears were sparingly shown; the best three dishes came from Mr. Goldsmith, who had clear-skinned, shapely fruits of Williams' Bon Chrétien, Beurré d'Amanlis and Duchesse d'Angoulême; Mr. Staples had medium-sized, ripe fruits of Marie Louise, Williams' Bon Chrétien (finely coloured), and Beurré d'Amanlis. Marie Louise and Williams' Bon Chrétien were the best ripe kinds shown. In the collection of Apples from Frogmore we remarked fine examples of Parker's Seedling, Wellington, well-coloured Cox's Orange Pippin, Fair Maid of Windsor (an orange-coloured kind tinted with scarlet). Wall's Seedling, and King of the Pippins. Amongst other good kinds were finely-coloured fruits of Summer Golden Pippin, Devonshire, Quarrenden, Kerry Pippin, Colonel Vaughan, Golden Pippin, and others. Mr. William Paul, Waltham Cross, also sent a fine collection of Apples, A good collection of Pears and Apples came from Mr. Wildsmith; and Mr. Killick, Maidstone also sent Apples in excellent condition. Apples, consisting of some of the most select kitchen and dessert kinds came from Messrs. George Paul; and Mr. Haycock furnished good Peaches, Nectarines, and Apples grown in pots. An extra prize was deservedly awarded to Mr. Mowbray, gardener to the Earl of Leven, Fulmer, Slough, for a magnificent bunch of Golden Champion Grapes; also to Mr. Rutland, gardener to the Duke of Richmond, for a fine dish of culinary Pears (Calebasse Grosse).

Cut Flowers.—Dahlias were shown in large quantities and in good condition. In the class of forty-eight show blooms, Mr. John Keynes, Salisbury, had the best collection; it contained remarkably well-matched and finely-coloured blooms of some of the best known kinds. Messrs. Rawlings & Co., Romford, and Mr. C. Turner, Slough, had also fine collections. The best twenty-four fancy dissimilar flowers came from Mr, John Keynes, who showed well-formed blooms, embracing all shades of colour; in the same class Mr. Seale, Sevenoaks, contributed unique blooms of some of the more popular kinds, as did also Mr. Chas. Turner, Slough. In the amateurs' class, the best twelve flowers (show varieties) came from Mr. H. Glasscock, Bishop's Stortford; and well-formed blooms also came from Mr. G. H. Fewkes, Tyburn, near Birmingham. Asters were shown in large numbers, and amongst them were excellent stands of quilled blooms from Mr. Betteridge, Chipping Norton, and Mr. Wheeler, Warminster. The best tasselled flowers, magnificent blooms, striped and self-coloured, came from Messrs. Saltmarsh & Son, Chelmsford. Roses, considering the bad season here, were well represented, Messrs. Paul & Sons, Mr. John Harrison, Mr. William Corp, and others showing fairly good collections of them. In the different stands we noticed good blooms of Alfred Colomb, Baroness Rothschild, and Marie Van Houtte. Gladioli in a cut state were furnished by Mr. George Wheeler, Warminster; they consisted of kinds with well-formed flowers of great purity of colour. In the amateurs' class the Rev. H. Dombrain had an excellent collection, as had also Mr. J. Sladden, Chipping Norton. Messrs. Kelway & Co., Langport, sent a large collection of seedling kinds, many of which were in size and colour of flower considerably in advance of any at present in cultivation. Mr. Charles Turner showed a good collection of cut blooms of Pompone Dahlias, and baskets of plants of autumn and winter blooming Carnations. Mr. John Laing contributed plants and cut blooms of Begonias, among which were some beautiful varieties.

Vegetables.—These were exhibited in excellent condition, and as the number of varieties to be shown was unlimited, the collections were unusually large. Mr. Pragnell, who had the best collection, showed no fewer than thirty-eight dishes, amongst which were remarkably well-grown, clean-looking tubers of Bread-fruit and Porter's Excelsior Potatoes, Sherborne Improved and James' Keeping Onions, finely-shaped Early Horn and Early Nantes Carrots, very large white heads of Veitch's Autumn Giant Cauliflower, Tomatoes, William I. Peas (in excellent condition), Cucumbers, Celery, and Cardoons, together with almost every other kind of useful vegetable, all of which were in admirable condition. Next in point of merit came a collection from Mr. C. Chaff, gardener to C. H. Goschen, Esq., Addington; this was in every way complete, but there was a want of finish about some of the productions. A good though small collection gained the third prize. In the class devoted to smaller collections of vegetables, there were numerous exhibitors, whose produce was of a meritorious description. Mr. J. Walker, Thame, showed samples of a new Onion named Exhibition; they were of the Banbury type, of good shape, and well ripened; they averaged 5 in. in diameter.

THE KITCHEN GARDEN.

WINTER TREATMENT OF CAULIFLOWERS.

The last week in September or the first week in October will in most places be early enough to prick out Cauliflowers into their winter quarters, and after the moist, growing weather which we have had, the check given in moving will be beneficial to them. If during mild winters, when the plants are showing signs of a too exuberant growth, they could be gently lifted with a small hand-fork, just sufficient to disturb a few of the longest roots and then pressed down again, there would be a less tendency to premature "bolting." This might be done at any time during November or December when the weather is mild, or later if necessary. There are many and various ways of wintering Cauliflowers, all more or less well adapted to the different circumstances and conditions. Planting under hand-lights is a good old-fashioned plan for the early crop; the lights should be placed in rows about 3 ft. apart, the land should have been deeply worked and well manured, and about nine plants should be planted under each light, to be thinned out in March to four—those removed to be planted elsewhere to come on in succession. There should be 3 ft. of clear space between the lights, as in mild weather the plants will be all the better for having them lifted off, unless they have movable tops; in that case the tops only need be taken off—but at all events abundant ventilation must be secured in mild weather, either by taking the lights entirely off, or by setting them up on bricks. The latter is a very good plan, and one commonly practised where hand-lights are much used, as it economises labour. In the southern counties Cauliflowers will generally pass through the winter safely simply pricked out 4 in. apart on the lee side of a hedge with a few fronds of Bracken or branches of Evergreens laid over them during severe weather, leaving them on for a day or two after the weather has changed, in order that they may thaw gradually. In cold districts it is a very good plan to prick the plants into frames 4 in. or so apart, in beds of light, loamy soil, near the glass. In fine mild weather the lights should be drawn off; at other times they should be propped up at the back. In bright frosty weather, during the early part of the day a thin shade will be beneficial in preventing the plants from suffering from sudden extremes of temperature. Scattering dry, dusty ashes over and amongst them occasionally will keep slugs in check, and if a pure atmosphere be maintained, mildew will be kept down.

Early Cauliflowers are an important crop, and no one should depend altogether upon one sowing, as in the case of a mild autumn and winter, if sown early, they button prematurely; and if, on the other hand, they are sown late, and the winter happens to be severe, the crop must be backward, even if the plants do not perish; therefore, it is always a good plan to make two or three sowings at intervals of ten days or a fortnight, and, if possible, bring them on under different conditions. Thus a part may be put out about October 1 under hand-lights; another part may be pricked out in a cold frame; a few may be left out in the open air; and a few for very early work may be potted and grown on under glass: the latter is an excellent plan to adopt in cold, ungenial situations. When plunged in old tan or leaf-mould near the glass, the plants acquire a sturdy habit, and when turned out in some sheltered, well-prepared bed in March, I have had them superior to the autumn-planted crop under hand-lights. When one has the means of giving a little warmth in winter, if anything happen to any of the early-sown crops, or if a suspicion be entertained that the plants may button prematurely, a sowing may be made under glass any time during winter; and if potted singly in small pots, and grown on in gentle heat near the glass (a warm greenhouse shelf is a good position for them), they will, if planted out at the end of March, be as good as the early-sown batch, and I have never known such plants to button prematurely. I have sown Cauliflowers in December and January in heat, grown them under glass till the first week in April, then planted them out on a warm border, and cut good heads the first week in June. I mention this to show that no one need ever be without early Cauliflowers even if the autumn-sown plants should fail, if the precaution be taken to sow a pinch of seed in heat under glass soon after Christmas, and under any circumstances, the plants will be sure to prove useful. E. H.

Blanching Late Celery.—In retentive soils Celery often suffers considerably from damp lodging in and around the hearts after being earthed up, and in some places many plants are useless from this cause. This is in many ways annoying, for if reliance could be placed upon the whole crop keeping in good condition, less might be planted in order to ensure a good supply, and the land thus saved might be profitably occupied with something else. The best way which I have ever found of obviating or checking this tendency to decay is to plant on the surface, and blanch with ashes, burnt earth, or old spent tan, first tying the plants carefully up, and then placing the ashes or whatever material is used around and amongst the plants and ridge, pressing it round them with the hands. Besides reserving the crop from premature decay ashes keep the slugs and snails at a distance, and during severe weather less covering will suffice to keep out frost.—H.

Potato Crops in Kent.—Potatoes have suffered much from blight in this locality, especially second early kinds, although some are nearly free from it; early kinds, such as Myatt's, Veitch's, and other Ashleaf sorts, also Extra Early Vermont, Early Oneida, Porter's Excelsior, Alpha, and others all ripened off early a good crop, and free from disease, although not so large as usual. Some time after the disease appeared, other kinds were lifted; some were much blighted, and others have gone bad since they were stored. Last week a quantity of Late Rose Potatoes were lifted nearly all sound and a good crop. This is a valuable Potato on this soil (a light, sharp loam); it is not a late kind, although its name would lead one to think it was, but quite a second early and good in quality. Several other kinds which I have grown on trial are much blighted. I find "Salus" does not prevent disease. The latter is said to spread faster in wet weather than in dry, a fact of which I am quite aware, yet with us the reverse was the case this season, the weather being dry and hot, and the haulm nearly all dried up with disease before the rain came.—W. Divers, *Wierton.*

The Potato of the Future.—We are all pretty familiar with the "Potato of the present," which requires from fourteen to twenty-four weeks from the time when the tubers are put into the ground to bring its anxiously-looked-for crop to maturity. Because of this it admits of only one crop being produced in the year. It is a plant of late years singularly liable to disease; it is subject to the attacks of spring frosts if planted too early, and to late frosts if not matured in good season; it is, in fact, a most precarious plant to cultivate. The Potato of the future must be something wholly different from this, because it must admit of being planted late enough to escape spring frosts, and to ripen its produce before the customary time of the disease. It must ripen, from the time of planting, in twelve weeks at least, that is to say, if planted on May 1, it must be ready for lifting and storing quite ripe on July 24. If such were the case, it would be lifted ere the disease appeared in any virulent form. Of course, such early-ripened tubers could not be expected to keep beyond Christmas suitable for table, and therefore it would be the business of the grower of the future so to arrange as to produce two crops in the year—thus: one from early-ripened seed planted May 1, and one from a second crop of late-ripened seed planted at Midsummer. As the disease only attacks crops that are considerably matured, and in the period comprised between the middle of July and the middle of August, the first crop would be too early and the latter too late to sustain any damage.—A. D.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Tender and True Cucumber.—This is stated by good growers to be one of the best of Cucumbers, both as regards handsome fruit and free-bearing properties. For winter culture it may perhaps be considered a rather too long-fruited kind; but for good flavour and appearance on the exhibition table it is unsurpassed. Examples of it were shown by Mr. Pragnell at Alexandra Park on the 13th inst. which far surpassed all other kinds exhibited on that occasion.—S.

Planting Cabbage.—There is no better place in which to plant Cabbage to stand the winter than in ground just cleared of Onions. It will require no digging or forking; the weeds should merely be removed, and the surface stirred several times with the Dutch hoe. The Cabbage plants may then be planted in lines 9 in. apart each way, and in winter, when Greens are scarcest, each alternate plant may be removed as required for use, leaving the remainder to form hearts in the spring.—S.

American Blackberries.—What experience I have had of the Lawton variety is more favourable than that of Mr. Tillery (p. 276). Having in my garden some wire trellises of Mr. J. B. Brown's manufacture, 8 ft. in height, I devoted about 40 yards in length to American Blackberries which were planted in 1875. In 1876 they fruited to a small extent, but the fruit was nearly all appropriated by the birds. This year the plants have covered the trellis to a height of about 7 ft.; and though the past summer cannot be said to have been exceptionally warm, we have had a very heavy crop of fine fruit, which has ripened well, and been gathered for preserving purposes. Our situation is cold and exposed, and the trellis is a self-supporting one, away from the garden walls; but it answers its purpose admirably, and I can recommend its adoption by any one who wishes to try the American Blackberries.—H. Turner, *Stockport.*

The Selection of Young Fruit Trees.—In ordering young fruit trees from a nursery, there is a considerable advantage in being first in the field—the early planter has the pick of the stock; and although a respectable nurseryman never knowingly sends out bad trees, yet there are degrees of goodness even in things of fair average quality. In the selection of young trees for walls, or any position where a blank would be objectionable, whether maidens or trained trees are chosen, none but those worked on good, sound, healthy stocks should be planted, and the eye and judgment requires some educating to tell which trees are likely to turn out best under given circumstances. As a rule, small, spindly stocks do not make long-lived trees, even if in their early life they have a clean, healthy appearance. Strength and substance are necessary in a stock that is expected to carry a fully-developed tree and to support it when heavily laden with fruit. The recruiting officer, before he passes a youth into the ranks of the army, takes the measure of his chest, as a guarantee that he possesses the necessary stamina to enable him to perform his duties. In like manner, a strong, stout stock, if otherwise healthy, is of more importance to a fruit tree than is sometimes supposed or allowed for.—H.

Air Roots on Vines.—I agree with the statement (see p. 276) that a close atmosphere overcharged with moisture encourages the growth of air roots, but I do not believe air roots are a sign that the roots are in a bad condition, or that they are unable to supply the wants of the large expanse of foliage. During the late spring we had occasion, while erecting a temporary stage for plants in one of the late Vineries, to enclose some stems of Vines for about 1 ft. where they entered the house; consequently this portion was in a close confined atmosphere, while the rest of the Vines were under ordinary conditions. On removing the staging a short time ago I was surprised to see large masses of roots protruding from the stems. To save them, therefore, from drying up, and to give the Vines additional feeding ground, we raised a narrow border of rich soil to enclose them. These Vines were in robust health and perfected a fine crop, with less than 1 per cent. of shanked berries. I attribute the production of air roots entirely to imperfect ventilation, accompanied by excessive atmospheric moisture. The Vine being naturally a free and vigorous-rooting subject, only needs the requisite amount of moisture in the atmosphere to induce the dormant roots that exist in embryo at the base of each bud or spur, to make it as much an aerial rooting plant as the common Ivy.—James Groom, *Henham.*

Best Bedding Lobelia, Henderson's Lustrous Improved.—As no one else has directed attention to the great merits and beauty and unequalled continuity of bloom of this beautiful Lobelia, I think it but fair and just to those who sent it out (Messrs. E. G. Henderson & Sons, Pine-apple Nurseries, Edgware Road) to say a few words in its behalf, as several other varieties have been commended in the columns of The Garden which I do not think at all as good as this seems to me to be. I grew for trial this summer two scroll beds, side by side, with Bronze Bicolor Pelargoniums down the centre, and a double row of the old variety, Lustrous in one, and Lustrous Improved in the other, down the whole length of the bed. For the last fortnight the former has been out of flower, and all the plants are now almost entirely withered away, whereas the Lustrous Improved is as beautiful as ever, and the greater number of the plants are so well provided with vigorous young growth that if the frost could only be kept from them they would, I am sure, continue in beauty for a month or six weeks to come. This variety is also by far the easiest to propagate of any Lobelia with which I am acquainted, affording continually an abundance of good soft cuttings which strike with the greatest ease and readiness stuck into a pan of sand and water, with all the drainage-holes carefully stopped up. They should be kept constantly well supplied with water, and they do not require any bottom-heat whatever to get them to strike. I have also grown this season Ebor, a kind unequalled for its deep shade of colour, but inferior to Lustrous Improved in compactness of habit and continuity of bloom, as it has lost all its brilliancy at least a fortnight ago. The two best whites are The Bride, still in full beauty and of good compact habit, resembling that of Lustrous, but not quite so cushion-like (this variety was sent out this season by a Norwich firm, from whom I received it, but whose name has for the moment escaped my memory); and White Beauty, received from Mr. Quilter, of Aston Grounds, Birmingham, which is an equally pure white, and of a still more compact and dwarf low-growing habit than The Bride; it is also most free blooming, but hardly continues so long in beauty as the other variety.—W. E. G.

Travelling Seeds.—Sometimes seeds only, sometimes fruits' are thus transported by running streams and ocean currents. The fruits of Fennel are exactly like miniature boats; and Funchal or Fennel Bay in the island of Madeira owes its name to this plant, colonized there by seeds that have safely made the voyage from the main land. In like manner, Hazel-nuts, Walnuts, and many other kinds of Nuts, have been carried by currents to a new home beyond the seas. For a long time the source of the large Cocoa-nuts that drift about in the Indian Ocean, and are finally stranded on the cast of Malabar, remained a mystery. These gigantic fruits, some of them more than 18 in. in diameter, and weighing from forty to fifty pounds, are not the produce of any neighbouring country, and the Hindoos called them "Sea Cocoas," supposing that they are supplied by some unknown plant. It has since been discovered that they are the produce of the Lodoicea, a magnificent Palm, growing on the Seychelles Islands, which lie on the eastern coast of Africa, more than twelve hundred miles from the nearest point of Indian territory. The currents of the Pacific Ocean carry out Cocoa-nuts and other fruits from the American continent to enormous distances in a similar manner. These find a resting-place on the coral ridges which are raised up from the bottom of the sea by the ceaseless labour of polyps; here they germinate, and soon cover with brilliant verdure what had formerly been a rock almost invisible to navigators.

International Potato Exhibition.—This is to be held in the Royal Aquarium, Westminster, on Wednesday, Thursday, and Friday next. The schedule comprises fourteen open classes and two for amateurs. Although the season has been very unfavourable, a good exhibition may nevertheless be expected, and if those who furnish the soundest and best tubers were also to state under what conditions they were produced some good might be the result.

The Great Summer Show of the Royal Horticultural Society (to be held at South Kensington, from the 28th to 31st of May next, both days inclusive) will probably be an event of considerable importance. The schedule, which is now ready for issue, has evidently been prepared with great care, the prizes being sufficiently liberal to insure a spirited competition. There are thirty classes for plants, in which the first prizes range from £20 to £6; one, for a collection of ten dishes of fruit, with £10, £7, and £5 as the first, second, and third prizes respectively. There also ten other classes for fruit, and one for a collection of vegetables consisting of ten kinds.

NOTES AND QUESTIONS—VARIOUS.

Kœlreuteria japonica.—Allow me to inform "H. P." (see p. 292) that there is a good plant of this shrub growing in the grounds here. It flowers most years, and is, when in bloom, a very attractive object. Lovers of choice shrubs who have not got it should not fail to add it to their collections. The foliage is especially pretty when dying off in the autumn.—H. J. C., *Grimston, Tadcaster.*

Lachenalia rubida.—I have grown for several years a bulb under this name which I have failed to flower. It produces an abundance of offsets, which, as well as the larger bulb, are of a singular form, quite unlike any I have met with among the other species, being cylindrical and thickened at each end. Have any of your readers grown this plant successfully, and, if so, will they kindly enlighten me on the secret of flowering it? Gawler, in his description of this species at t. 933 Bot. Mag., does not hint that it is difficult to bloom, and it is quite possible that I have not the true L. rubida.—W. T. T.

The New Potato Digging Machine.—For many years people have tried to invent a machine whereby Potatoes can be dug without peeling or otherwise injuring them, and Mr. Aspinwall has at last succeeded. It was tried on Mr Howard's farm, and answered perfectly. Its capacity with a pair of horses is from 3½ to 4½ acres per day. It leaves the Potatoes entirely on the surface, clear from the tops, and never "chokes," a fault which, we believe, it possessed last year. The Potatoes are deposited directly in the rear of the machine, without their being in the least injured, and the gatherers have not the slightest difficulty in collecting them. With respect to the draught of the machine, it is so easy that on such land as that on which it was tried at Rufford one horse would have sufficed to work it.

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> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

IN THE INDIAN SEAS (SINGAPORE).*

August 6, 1877.—I like the climate of Singapore better than I had expected—of course from 9 a.m. to 3 p.m. it is very hot as a rule, but the mornings and evenings are deliciously cool and breezy, and the weather is so regular that very thin white clothes may be worn without any danger, so different from the sudden transitions of temperature which occur in England. The mean temperature is about 82°, and there is but little variation throughout the year. Being close to the sea Singapore gets cooler breezes than places further inland, and were the sanitary condition of the place—drainage, &c.—well carried out there would scarcely be a more desirable climate in the world. The people here are principally Chinese, but there are a great many Malays and Klings, together with a fair sprinkling of Hindoos, mainly Bengalese; of English there are but few, and they are nearly all merchants, large store or hotel keepers, shipping agents, &c.; the Chinese are merchants, petty shopkeepers, artizans, coolies or labourers, carriers, &c.; the Malays form the police and Gharry (cab) drivers; the Klings are itinerant traders or shopkeepers; while the Bengalese monopolise the washing or laundry business. Fruit and fish shops or stalls meet one at every turn. The following list of fruits and vegetables taken from a Chinese newspaper for January, may prove interesting, as showing the immense variety of produce grown by the Chinese gardeners.

List of Fruits.

Aleurites
Almonds (Bombay)
Apples, dried
,, Californian
Bananas, Punti
,, Common
Chestnuts, new
Cocoanuts
Currants
Dates
Figs, dried
Ground Nuts

Lemons
Lichees, dried
Loong Ngan, dried
Olives, green, Punti
Oranges, (Coolie) Chang
,, Sweet, Sun-woey
,, (Mand.) coolie
,, Kam-kwat
,, (Mandarin)
Papaw
Pears, Santoong
,, Chefoo

Pine-apples, Punti
Plantains, common
,, fragrant
Pomeloes or Shaddock
Prunes, dried
,, Amoy
Raisins, Muscatel
Salisburia Seeds, Pak-kwo
Sugar Cane
Tamarinds
Walnuts
Water Chestnuts, Canton

Vegetables.

Asparagus
Bamboo Shoots
Beans, sprouting
,, Broad
,, French (Macao)
Beetroot
Brassica
Cabbage, white Canton
,, Common
,, Hong Kong
,, Macao
Carrots, Salt
Carrots, Fresh
Cauliflowers
Celery, Chinese
,, English
Cucumbers
Chillies, Dried

Chillies, Mixed
Curry Stuff, English
Egg Plant
Garlic (bulb) dried
Ginger
Greens, White
,, Winter course
,, Sprouts
Green Peas, in shell, old
,, young
Horse Radish, Shanghai
Lettuce, Chinese
,, English
Mint
Mushrooms, dried
Onions, Bombay
,, Green
Parsley, Chinese

Parsley, English
Potatoes, California
,, new, Macao
,, Sweet
Pumpkins
Radishes
Scallions
Shallots
Sesamum
Taro (U Tau)
Tomatoes
Turnips, Salt
,, English
,, Chinese
Water Lily Roots
Water Cress
Yams

The fruits at the present time in the market place are Bananas, Mangoes, Limes, Pomeloes, green-skinned but delicious Mandarin Oranges, Papaws, Bread and Jack fruits, Durians, Pine-apples in abundance, Rambutans, Mangosteens, Guavas, Australian Apples (just arrived), and numerous other fruits less well known, and eaten principally by the Chinese. Green Cocoa-nuts are plentiful at 1d. or 2d. each, and in the hot weather these furnish a delicious beverage nearly as pure as water, and with a rich, nutty, milk-like flavour, to which a dash of brandy or sherry is a great improvement. A small Nut will hold 1 pint (a large one 3 pints) of this colourless milk, and here, where drinking water is often fraught with danger, it seems inexplicable that green Cocoa-nuts are not more valued by Europeans than they are. Universally among Europeans there is a shadowy misconception as to the value and usefulness of fruit as food—and nowhere is this more evident than in Singapore, where the finest of all tropical fruits are abundant during the whole year—notwithstanding the fact that the Chinese, from the richest merchant to the poorest coolie, eat little else but fruits and vegetables, supplemented now and then with a little salt fish. The Durian is a favourite fruit here, and is the size of a large Cocoa-nut after the husk is removed, covered with stout, broad-based prickles; indeed, the fruit of the Horse Chestnut, enlarged twenty or thirty times, would be nearly the exact counterpart of a Durian in appearance; when fully ripe the fruit splits into four or five sections, each of which contains a row of from three to five large seeds, surrounded by a luscious, sulphur-coloured pulp, concerning the flavour of which there are many conflicting statements. I think the rich, creamy pulp of a good Durian—for all are not good—may be likened to Nectarine and Apricot pulp mixed, with a dash of Pine-apple, a little flour for thickening, and just the suspicion of an Onion. The tree bears two crops every year, and the earliest fruits of the season fetch as much as 4s. 3d. each, but when plentiful, as now, from 5d. to 1s. is the usual price.

The Vegetation.

Much of the island of Singapore is covered with jungle and waste patches, on which Melastoma malabathricum takes the place of Ononis arvensis or Gorse at home, our common Brake Fern (Pteris aquilina) being here nearly crushed out of existence (for it does grow here) by Gleichenia dichotoma in dense masses, and 10 ft. in height. The surface of the island itself is tolerably flat, from which rise many isolated, rounded hills, of which perhaps Bukit Tima (400 ft.) is the highest. These Bukits or hills are mostly covered with virgin forest or jungle, but clearance for cultivation is now rapidly going on. Whereever the jungle has been cleared by fires, many pretty Ferns and the commoner varieties of Nepenthes spring up among the young Grass in all directions, and down by the rivulets and ditches a few Tree Ferns luxuriate. Bordering the red sandy roads in all directions are patches of Bananas, Sugar-cane, Tapioca, or Indigo, fringed by Bamboo fences and Cocoa-nut plantations. Many species of Palms luxuriate here, but Cocos nucifera and the Betel nut (Areca Catechu) meet the eye in all directions and add much to the picturesque appearance of the cool, whitewashed bungalows which nestle on the hill-sides. Some of the principal streets are fringed with trees, and a week ago a splendid specimen of Poinciana regia near the Town Hall was a perfect bouquet of vivid scarlet flowers and fresh green, feathery foliage—a picture never to be realised by those who have only seen it starved in a pot in English hothouses. The particular tree to which I allude is about 20 ft. high, with a rounded, spreading top, and the panicles of scarlet blossoms were so profuse that the term bouquet-like is strictly applicable.

Private Gardens.

The gorgeous Amherstia grows well in several gardens, and especially so in those of Mr. Whampoa, a wealthy Chinese merchant, where there are many examples in all stages of growth. Some of the older specimens had been cut back, and are now forming glorious heads of foliage, through which the scarlet blossoms here and there peep; but as an effective tree, from a floral point of view, it can never rival Lagerstrœmia Reginæ, which is just now a mass of large lilac-like panicles; the Poinciana, apart from being one of the best and most effective of all tropical garden trees, is also one of the most variable, a fact doubtless owing to its being generally increased by means of seeds, which are freely produced in long, pendent, scimitar-like pods. Mr. Whampoa has a large collection of Water Lilies in open-air ponds or tanks, and at the time of my visit Victoria regia, Nelumbium speciosum, Nymphæa rubra, N. cœrulea, and others were in great beauty. Roses and Magnolias were in profusion, the cool morning air being deliciously perfumed by their waxy-petalled flowers. Many curious examples of dwarfed trees and shrubs are to be seen here, as also one or two very handsome Arecas and other Palms. The Government Botanical Gardens are situated at Tanglin, a distance of about three miles from the town, and consist of a large, undulated plot of ground well laid out, tastefully planted, and nearly surrounded by a fringe of jungle, which adds much to their apparent size. Araucaria Cookei here forms a distinct and effective tree, columnar in shape, and 30 ft. or 40 ft. in height. The Travellers' Tree (Urania speciosa) of Madagascar also does well, and near the entrance several low trees are overrun by a most luxuriant and floriferous growth of Allamanda Schotti. The effect of light and fresh air on many of the plants common to English hothouses is here something wonderful, the leaves being of a much more vivid green tint, albeit exposed to a scorching sun, while the hues of the flowers are proportionately brighter. A new lattice-work Orchid-house has been erected, and is covered with such creepers as Tecoma jasminoides, Passifloras of different kinds, Antigonon leptopus, Cissus discolor, &c., the Orchids themselves being suspended inside in baskets containing coir fibre and crocks.

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* Communicated through Messrs. James Veitch & Sons.

Chinese Gardening.

Singapore possesses an excellent climate for gardening operations, and nearly every house, even the meanest Palm-leaf hut, has its strip of garden attached, in which Onions, Sweet Potatoes, Caladium esculentum, Chilies, and other common vegetables are grown. It is simply astonishing to see the thrift of the Chinese, especially those of the poorer classes, in all matters relating to food or medicinal products, for scarcely a plant exists from which they do not derive food, medicine, flavouring for curries, dyes, or other advantages, and as cultivators of market vegetables they have the monopoly here just as they have in San Francisco and other places to which they have emigrated. In the narrow streets of the Chinese quarters of the town itself pot plants are largely grown in bowl-like vessels of green or grey porcelain, and these are set on narrow ledges, or other supports in front of all the upper windows. China Roses do well so treated, as do also Caladiums, and a bushy plant much resembling the common Rue is grown almost universally, as it has the reputation of keeping away bad spirits and ill-luck from the houses before which it grows.

Manufactures and Modes of Transport.

All heavy goods here are transported either by bullock carts or by coolies, and here again we have evidence that a diet consisting principally of vegetable substances is capable of keeping men who undergo great exertions and fatigue in a state of healthy vigour. Rice, salt fish, and fruit form the staple sustenance of the Chinese coolie, who trudges cheerfully along with a load of 200 lb. or 300 lb. on his shoulders, apparently entirely oblivious as to the great weight he is carrying. Nearly all the manufactures of Singapore are carried on by the Chinese, whose productions for cheapness and quality will bear comparison with those of any other country. Of basket work, jewellery (especially some exquisite filigree work) cabinet making, iron and tin working, and of course porcelain manufacture I have seen beautiful examples. What a pity it is that the literature of such a people is buried in obscurity! what a loss to our own artizans and art manufactures it is that the results of their skill and ingenuity are so rarely and so sparsely represented in our museums and art schools at home! This island, the mainland, Johore, and the Malayan Peninsula behind, consist of a vast tract of fertile soil destined ere long to become the

"Garden of the East."

Even the primæval jungle is rich in wealth, timber trees almost rivalling those of the West in magnitude, and of great variety suitable for many different purposes. Here also the finest Rattan Palms are obtained, and El Dorado that it is, gold and other metals await a more energetic system of mining. Over all this enormous tract the home of the pure and gentle Malay races—the Incas of the East—the Chinese are spreading like grasshoppers, trading, buying up the land where possible, and by thrift and industry aided by secret societies, they bid fair in time to extirpate the native races in Malaysia. In the hotels here there are one or two little vegetable delicacies rarely seen at home, such as "Banana fritters," which are made by peeling perfectly ripe and fresh Bananas or Plantains, covering them with pancake paste, and baking them in a brisk oven: they should be served quite hot on a clean napkin, and when well made are simply delicious. Now that these fruits are so plentiful, and withal so cheap in the London markets this hint may be worth adopting. Another way of eating Bananas here is with cheese instead of bread or biscuit, and the modicum of salt used in the cheese adds a piquancy to the flavour of the Bananas which is very agreeable. Another exquisite and simple dish for hot weather is a plate of milk (a soup plate is best) into which a large spoonful or two of Red Currant and Raspberry jelly is placed. In tasting this combination for the first time I thought it by no means a bad substitute for the Strawberries and cream of England. I have more to relate respecting this Liverpool of the East, but I am afraid I have trespassed on the patience of the readers of The Garden too much already. F. W. B.

New Worm Destroyer.—A week or two ago we received from Messrs. Rutley and Silverlock, 412, Strand, a new worm destroyer in the shape of a cake of "soap," said to be made from the seed of the Tea plant, and to be much used in China for worm killing. This new destroyer we sent to Mr. Groom, of Henham Hall, for trial, and the following is his report upon it:—The cake of soap which you sent me has exceeded my most sanguine expectations, both by its speedy action and effectiveness. I crushed, according to the directions, about 1 lb. of the soap to powder (as from its hard, dry, oil-cake-like character, it takes a long time to dissolve), and soaked it in an ordinary full-sized garden watering-pot of hot water, stirring it occasionally until it was thoroughly dissolved and cold. I then selected a plot of Grass on which worm casts were abundant, and after sweeping it clean I poured as much of the solution on it as would soak in. In less than half an hour the surface was completely covered with worms of all sizes, which all died after a short struggle. On the small space operated on (about 6 ft. square) I collected over 100 large dead worms, and the birds carried off as many small ones. The Grass looks even more luxuriant than before it was operated on, and I need scarcely add that there is no vestige of a fresh worm cast. Being so well satisfied with the results of this worm destroyer on the lawn, I resolved to try it on plants in pots and enclosed borders. I selected Roses and similar plants in pots that showed signs of having worms in them, and gave each a thoroughly good soaking, and the results were in all cases as speedy and effectual as in the case of the lawn. The worms were lying on the surface quite dead shortly after the application; but to make sure that it was harmless, even in the case of the tenderest-rooted subjects, I thoroughly soaked such plants as Balsams and young French Beans in pots, and none of them shows the slightest ill effects, although the application was repeated two or three times at intervals of two days. I therefore consider this new worm destroyer a valuable addition to our list of garden requisites, that is, if its price be not prohibitory.

Bathing in Battersea Park.—The Battersea Vestry, at their meeting held the other night, the Rev. Canon Erskine Clarke in the chair, resolved to apply to the First Commissioner of Works for his consent to receive a deputation from them on the subject of permitting bathing within certain hours in the ornamental water in Battersea Park. Mr. Durrant, a vestryman, said it was very unlikely that permission would be given, as the lake throughout was not more than 3 ft. deep. Mr. Gay, another vestryman, observed that it could easily be made deeper, and even now if well filled it would be nearly 6 ft. deep. He thought it was a disgrace to the parish that they had no public bathing place. This observation was received with applause. [We have long considered it wrong that these vast and costly London Parks should not provide bathing places accessible at all hours. There is no other want they can now, or at any other time, meet more likely to be useful than cleanly, well-ordered bathing places. It is wrong to convert a beautiful piece of open water into a bathing place, because it prevents the general enjoyment of the scene at the same time by others. But there is not one of the large London parks where an acre or two of water could not be formed that would make delicious bathing places; these could be surrounded by shrubberies in a way to increase, instead of diminish, the beauty of the park. A bathing place only open early in the morning and late in the evening is a very poor substitute for what is wanted. —Ed.]

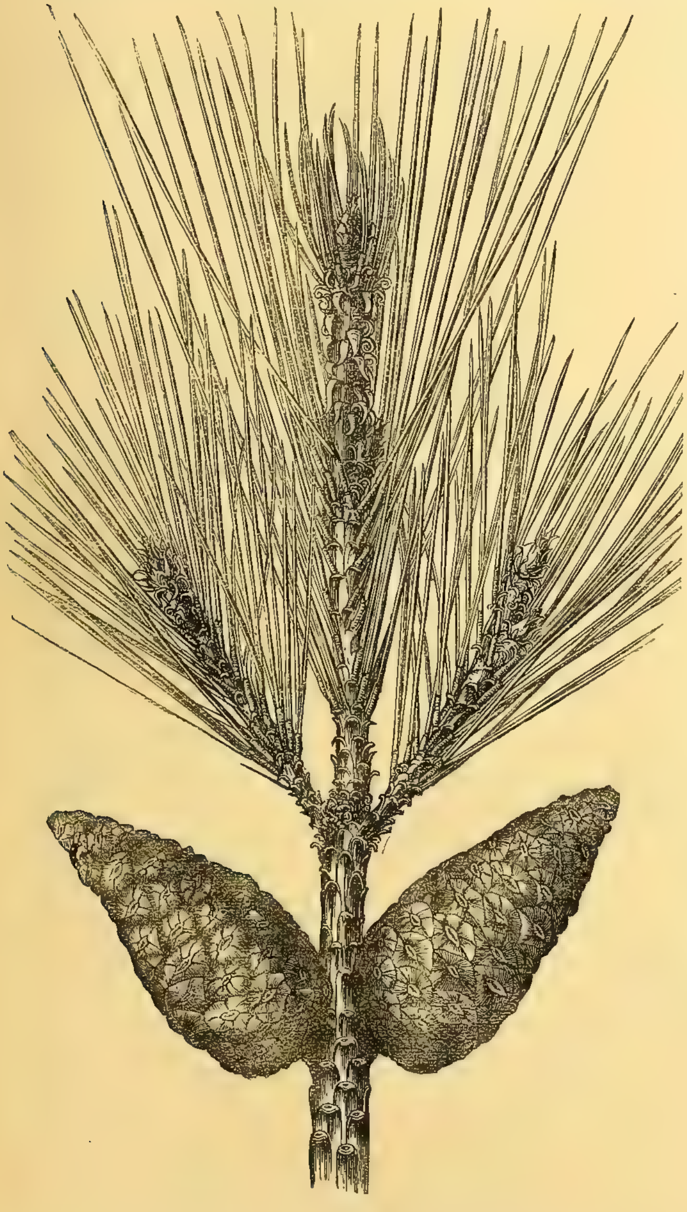
Blechnum Spicant trinervium.—This distinct and beautiful variety of B. Spicant (which, by the way is, I believe, restricted to Ireland) when better known will assuredly prove a favourite. Its chief distinction lies in the lowermost pinnæ, which are developed in a pinnate manner, sometimes one-third the length of the entire frond, thus giving the latter a tri-pinnate appearance. It must, of course, be planted out to reveal its true character: it thrives where the typical form does. It was introduced by Messrs. Rollisson last spring.—J. T. B.

TREES AND SHRUBS.

THE PYRENEAN PINE.

(PINUS PYRENAICA).

The foliage of this tree is very distinct, quite unlike that of any other Conifer. The leaves are in twos, of a beautiful grass-green colour, and from 6 in. to 7 in. in length. It can easily be distinguished from other Pines on account of the deep yellow-coloured bark on its young shoots; the cones are about 2½ in. long, rather egg-shaped, on short foot-stalks, sometimes in twos, but mostly solitary. It was discovered on the Pyrenean Mountains, where it forms extensive forests, by Capt. Cook, by whom seeds of it were sent home in 1843. This tree is highly ornamental, especially when young; its fine, upright-growing, light green leaves, and the orange-coloured bark on the terminal shoots being its most striking and beautiful features during that stage; but when older, it assumes a coarser habit of growth; its branches become stout, wide-spreading, and straggling, and altogether its general appearance is far from attractive. It is not likely to be ever valuable as a timber tree in this country, the wood being of inferior quality. This Pine has never been very extensively planted, on account of its scarcity throughout the trade, and the difficulty in procuring seed true to name. G. B.



The Pyrenean Pine (Pinus pyrenaica).

CLOTHING BARE PLACES UNDER TREES.

Grass will not grow well under a dense shade; even when frequently renewed the result is unsatisfactory. Yet, in conspicuous positions, the bare earth has an objectionable appearance, and the substitution of something of an evergreen character becomes a matter of importance. Whatever is chosen must either have a creeping habit, like that of Ivy, throwing out roots wherever the branches come into contact with the soil, thus always maintaining a clean, fresh appearance; or else like the Periwinkles, be able quickly to renew themselves from their base. Take, for instance, either the large or small Periwinkle; masses of either of these usually look worn and shabby towards the end of March, but trim off the discoloured growth and foliage, and in a short time they will be beautiful again; and if any light at all reach them, they will flower in the greatest profusion. There is scarcely anything so good as Periwinkles for covering shady banks, where the soil is of an inferior description. Even Ivy takes some time to establish itself in bad soil, but the large Common Periwinkle (Vinca major) will grow in anything and almost anywhere. One of the creeping-rooted St. John's-worts (Hypericum calycinum) will also grow well in shady positions; once get it established, and cut it back occasionally, and it will give no further trouble; but all leaves that fall upon and are buried amongst its branches, or that are drifted by the wind, if not absolutely unsightly, should be allowed to remain for the purpose of affording nourishment. Euonymus radicans variegatus will likewise grow in shady places, and when planted somewhat thickly, and pegged down, it soon forms a close carpet. Lomaria Spicant I have also seen do well in woods, where the shade of the foliage was heavy, and very pretty and interesting it looks growing in masses, and it will transplant with safety. Where a less formal growth is admissible, the common male Fern (Lastrea Filix-mas), or the Shield Fern (Polystichum angulare), looks well in summer, but the former is not evergreen, and would not suit where a covering of that kind is desired. Several species of pretty close-growing Mosses are found naturally under the thick shade of trees; and where they thrive no better carpet need be sought, as they possess the advantage of always looking fresh and green. The Woodruffe (Asperula odorata), when naturalised under the smaller kinds of Conifers, such as Arbor-vitæ, or any other close, low-growing evergreen, has a very good effect. But this, and, indeed, all other plants that may be used for the purpose of forming a close undergrowth, should be given a fair start. It often happens that the soil under large trees is thoroughly exhausted, and to plant in it without some addition would probably be useless; first break up the surface as far as can be done without injuring the roots of the trees, and then spread over it 3 in. or 4 in. of good soil; there would then be a chance of the plants used becoming established before the roots of the trees monopolised the fresh soil, and when well established they would be able to hold their own in the contest. Wherever Ivy is employed, and there is nothing that looks neater or is better adapted for making quick growth, either under the dense shade of the Cedar of Lebanon or the heavy drip of the Beech, it should be kept from climbing the trees if they are choice and valuable specimens; and where fresh soil is applied as a top-dressing in which to plant, it should be placed quite close to the trunk of the trees. E. H.

The Spiræas.—Mr. Gordon writing about the Spiræas in the London Garden, says of S. tomentosa that it is 4 ft. or 5 ft. high; that the flowers are red, and that they bloom in August and September. The plants which we have seen would average less than 3 ft; the flower is generally rose-coloured, sometimes white—never red—and it blooms late in July. Mr. Gordon remarks at the end of the article, that the Neillias of Prof. Don are considered by some botanists, to be species of Spiræa—which reminds us that the old favourite Ninebark which is too venerable to be danced about, has been removed from the Spiræas and placed under Neillias in the first volume of the "Botany of California."—"Rural New Yorker."

NOTES OF THE WEEK.

Vases in Autumn.—In furnishing garden vases in the open air, nearly all the right work has yet to be done. They are as stereotyped and as poor as if the plant-world consisted of a hundred forms. The most beautiful vases we have lately seen were in Prof. Owen's garden at Sheen, each filled with a very large plant of Sedum Sieboldi. The plant seems to thrive best lifted up in the vases, and the beauty of the leaves, each bordered with a red line, is more easily seen.

Gladiolus Saundersi.—This beautiful Gladiolus has been unusually fine with me this summer; the bright, fresh colour of its wide, expanded flower, its pretty white throat, and feathering on the lower lip, render it perhaps the most attractive of the genus. Its only defect is the habit it has of not holding its head upright.—H. HARPUR CREWE.

The Regent's Park.—In our recent notices of the London parks, we omitted mention of the gardening in this, which is really well and tastefully done, there being numerous graceful forms among the more ordinary subjects, and a considerable amount of variety. In this, as in all the parks, however, the aim for the future must be planting as opposed to mere temporary decoration. Instead of painting the house every year badly throughout, it is best to do one room at a time, and do it to last.

Erodiums in Autumn.—E. Munbyanum has been gay for some weeks past, and will probably continue to be so for some time to come. It has large, sometimes three-lobed leaves, and conspicuous, rose-coloured, widely-expanded flowers. I have it growing round a standard Rose tree, along with the pretty E. pelargoniiflorum, which has large, white flowers with a purple blotch at the base of the upper petals. I am very fond of these Erodiums, fugacious though they are. I learnt to like them when in Rome years ago; I used to think the little pink tufts of E. romanum one of the prettiest of the Roman sights. Will some one send me a cutting or tell me where to get a plant of the lovely E. incarnatum, which I have lost for several years, and have hitherto failed to recover?—H. HARPUR CREWE, *The Rectory, Drayton-Beauchamp, Tring.*

Mr. Wallace on Colour in Plants.—We expected much interest in Mr. Wallace's papers on "The Colours of Plants and Animals" in "Macmillan," but regret to say that we find little that one who knows anything about plants can follow or agree with. Very showy flowers, we are told, are very seldom sweet, the Rose, Pæony, Magnolia, and hundreds of others notwithstanding. "The relation," says Mr. Wallace, "of white flowers to nocturnal insects is also well shown by those which, like the Evening Primroses, only open their large, white blossoms after sunset"—most of the Evening Primroses, and nearly all the large and vigorous ones, being among the most showy of clear yellow flowers. Plants, and among them the "Stone Mesembryanthemum," are supposed to resemble their surroundings by the need of "protection from their numerous enemies," but nothing is said of the thousands of species of plants grazed down every year throughout the world, nor is it stated why one should be protected and a dozen unprotected.

Vegetarian Restaurants.—I wish, with you, that gardens were multiplied; but ten years' experience of vegetarianism shows me that, even as things stand, townspeople have little to complain of. For the last five years I have had a garden, but it would be far dearer to me to raise vegetables and fruit than to buy them. I find everything in the market except German Peas, the *Mange-tout* of the French. "G. A. S.," whom you quote, is so far right when he says that a single member of a family finds it difficult to live as a vegetarian at his family table. Naturally many cooks murmur at having to dress (what they call) "a separate dinner" for him; yet possibly a deeper annoyance to them is that he is sure to be far more particular that his vegetables are well dressed than flesh-eaters are; at most only one additional dish is needed. Notoriously a majority of English cooks send up many vegetables but half done, or mixed with unpleasant water. When I became a vegetarian, my present cook, already verged on the age of seventy, and certainly much wedded to her old ways, always cooked vegetables well, and to that I attribute it that from the first day until now I have never had any difficulty with her. It is as easy to make a vegetarian pie as a beef-steak pie; to make a savoury Rice, Barley, Oat, or Wheat pudding as a sweet pudding. Even to cook an omelet nicely (which needs care) I am assured is not more laborious than to make a Rice pudding, and is easier than a rich Plum pudding; difficulties in this way are only imaginary. As fast as people demand more vegetables gardens will increase. Meanwhile, my vegetarian diet feeds me, not only better than flesh, as my health attests, but the cost is less than servants' board wages amount to. But let vegetarian restaurants multiply ever so much, the expense of the house, the tablecloths and other appurtenances, and the attendance, must be double that of the viands, if all is clean and at all acceptable; hence it will always be cheaper to feed at the family table. "G. A. S." must try to convert his messmates; a vegetarian club seems to be a step towards vegetarian restaurants.—F. W. NEWMAN, *President of Manchester Vegetarian Society.*

Eryngium pandanifolium.—This fine tropical and umbelliferous plant is thriving admirably in the neighbourhood of London. A specimen now in Professor Owen's garden at Sheen has thrown up flowering-stems over 12 ft. high, and forms one of the most striking objects one could see in a garden. The lower or leafy portion resembles the rosette of a vigorous and graceful tropical Pandanus.

The Atlas Nut (Corylus algeriensis).—This large and handsome Nut has been sent to us by Messrs. Rivers, in the form of branches full of cob-like Nuts. It seems a fine kind.

A Friend in the Tropics.—Those who may have missed Mr. Burbidge's many sketches and notes in THE GARDEN for some time back, will be interested to hear from him in the Indian Archipelago, where he has now a new and fertile field for observation. Few travellers, we imagine, ever left England whose training and knowledge better fitted them for recording impressions interesting to horticulturists. He is collecting plants for Messrs. Veitch, of Chelsea.

"Arboretum Segrezianum," by A. Lavellée, is a volume containing a classified list of trees and shrubs cultivated at Segrez (Seine-et-Oise), in the fine collection at various times alluded to in THE GARDEN. We hope soon to notice it at greater length.

Crinum giganteum.—Specimens of this lovely Amaryllidaceous plant are now finely in bloom in Messrs. Veitch's Nursery at Chelsea, where each flower-spike is bearing four or five large Lily-like blossoms of the purest white, and beautifully scented. Though Crinums as a rule do not last long in bloom, they are, nevertheless, well worth attention on account of their easy culture and their effective character when in flower.—C. S.

Potatoes in Germany.—At a meeting of the Social Science Congress which took place the other day, Mr. Caird said—"The Potato crop is becoming more and more precarious. It is costly to grow, expensive in seed and manure, exhaustive of the land, and very liable to disease, and now possibly to the attacks of the Colorado Beetle. The extent planted has declined nearly one-fifth since 1871, while the imports of foreign Potatoes in the same time have risen from 43,000 to 300,000 tons. Germany is the great Potato-growing country, whence we can always draw by a moderate increase of price whatever quantity we require. The annual crop in that country is twice as great, both in quantity and per head of population, as that of either France or the United Kingdom, but it is not exported till the price rises above the rate which it yields when made into spirits."

The Tomato Crop.—The importance of this crop for marketing purposes has increased to a marvellous extent during the past few years, and market gardeners, who formerly devoted but little space to the culture of Tomatoes, now grow them by the acre. They are grown extensively on Mushroom ridges as well as in the open ground. The former plan as a rule gives the best results, inasmuch as the fruit ripens earlier, and the chances of disease through rain in autumn are consequently diminished. This year a great proportion of the crop, which has been generally good as regards quantity, has been completely spoiled by a disease similar to that which attacks the Potato; but, notwithstanding this, the markets have been, and are still, well supplied with Tomatoes of fair quality. Some growers have individually disposed of as many as 250 or 300 bushels per week.

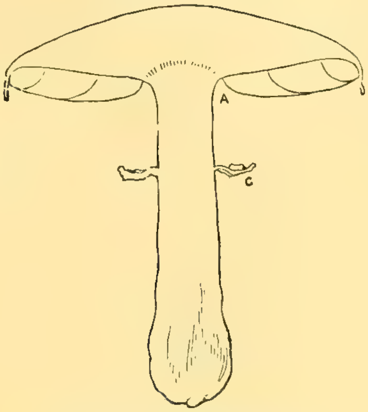
Distribution of Plants.—We are requested to announce that the Commissioners of Her Majesty's Works and Public Buildings intend to distribute this autumn, among the working classes and the poor inhabitants of London, the surplus bedding out plants in Battersea, Hyde, the Regent's, and Victoria Parks, and in the Royal Gardens, Kew, and the Pleasure Garden, Hampton Court. If the clergy, school committees, and others interested will make application to the superintendent of the park nearest to their respective parishes, or to the director of the Royal Gardens, Kew, or the superintendent of Hampton Court Gardens, in the cases of persons residing in those neighbourhoods, they will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution.

Gardeners' Benevolent Institution.—We understand there will probably be a liberal addition to the pension list of this Institution, as will be seen by an advertisement in our columns to day. We have reason to believe that Mr. Cutler's visit to the Carlisle show, and other horticultural meetings, have had a very satisfactory result, so much so that the committee desire him, with a view of advocating the claims of the institution, to continue his visits to important shows in various parts of the country.

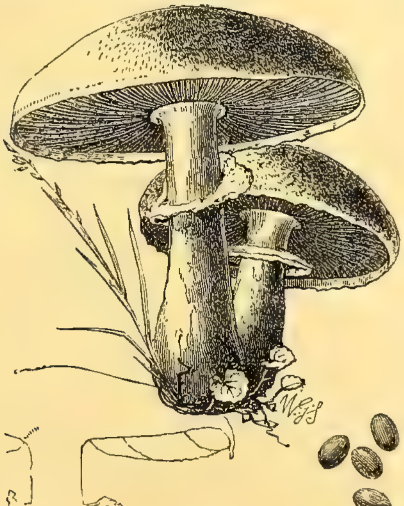
SELECT EDIBLE FUNGI.

At this, the Mushroom season, we have thought it desirable to publish figures of some of the more important edible fungi, as well as of the common Mushroom, for the benefit of fungus gatherers. Much valuable food is wasted from want of knowledge of what to gather and what to avoid, and the illustrations in question may serve as a help in this matter.

True Mushroom.—The question is frequently asked, are there any infallible rules for distinguishing the true Mushroom from all other fungi? and, if so, what are the crucial points of distinction? First, and foremost, the true Mushroom (Agaricus campestris) is invariably found amongst Grass in rich open pastures, and never on or about stumps, or in woods. Many cases of poisoning have occurred owing to the supposed Mushrooms being gathered from stumps or in woods; it is true there is a certain variety found in woods and woody places (A. silvicola); but, as far as amateurs are concerned, it is best left alone. A second very good point is the peculiar, intense purple-brown colour of the spores (which are analagous to seeds); the ripe and fully-matured Mushroom derives the intense purple-brown colour (almost black) of its gills from the presence of these innumerable coloured spores. To see these spores, and so become acquainted with the peculiar colour, remove the stem from a Mushroom, and lay the upper portion, with the gills lowermost, on a sheet of writing paper; in a few hours the spores will be deposited in a thick, dark, impalpable powder. Several dangerous species, at times mistaken for this Mushroom, have these spores umber-brown, or pale umber-brown in colour, and belong to Pholiota or Hebeloma. In the uppermost figure is shown a vertical section of the true Mushroom, which differs (when the colour of the spores is taken into consideration) from almost all other Agarics, and certainly from all poisonous ones. One of the principal points to be observed is the distinct and perfect collar at C, quite encircling the stem, and the edge of cap at B, overlapping the gills; in some poisonous allies, as A. œruginosus (generally found on and about stumps), this ring is reduced to a mere fringe, and the overlapping margin is absent, or reduced to a few mere white flecks or scales. Lastly, the gills never reach or touch the stem A, for, on inverting a Mushroom, a blank space will be seen all round the top of the stem where the gills are free from the stalk. There are innumerable varieties of the true Mushroom (and of the Horse Mushroom), but all are equally good for the table, sometimes the top is white and soft, like kid-leather; at other times it is dark-brown and scaly. Sometimes, on being cut or broken, the Mushroom changes colour to yellow, or even blood-red; at other times no change whatever takes place. But, observe, the Mushroom *always* grows in pastures; *always* has dark purple-brown spores; *always* has a perfect encircling clothy collar; and always gills which do not touch the stem, and a top with an overlapping edge.

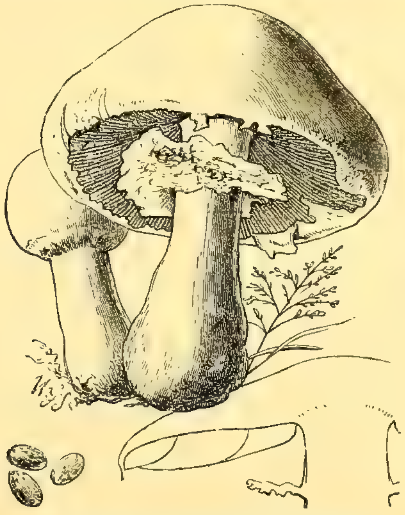


Section of True Mushroom.



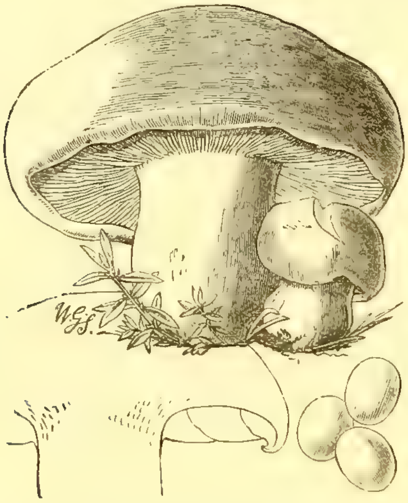
True Mushroom (Agaricus campestris).

Horse Mushroom (Agaricus arvensis).—This species is very nearly allied to the true Mushroom, and frequently grows with it, but it is coarser, and has not the delicious flavour. It is usually much larger, often attaining a very large size, and turning a browish-yellow as soon as broken or bruised. The top in good specimens is smooth, and snowy white; the gills are not the pure pink of the true Mushroom, but of a pale brownish-white, ultimately becoming brown-backed. It has a big, ragged floccose ring, and the pithy stem is inclined to be hollow. It is a species often exposed for sale in Covent Garden Market. When young and fresh, the Horse Mushroom is most desirable; it yields an abundant gravy, and the flesh is firm and delicious. It is a valuable plant when freshly gathered, but when stale it becomes tough and leathery, and without aroma or juice. Many country-folks readily distinguish the true from the Horse Mushroom, and show antipathy to the latter, although they are always willing to put it into the jar as one of the ingredients of ketchup.

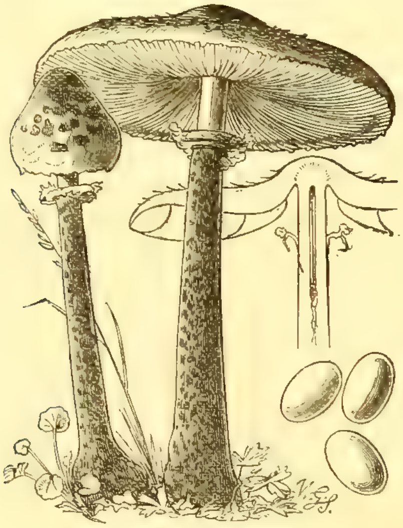


Horse Mushroom (Agaricus arvensis).

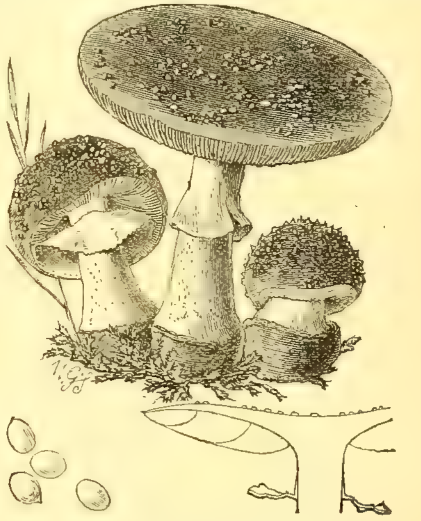
True St. George's Mushroom (Agaricus gambosus).—The St. George's Mushroom cannot well be mistaken for any other. The fact of its appearance in spring, and growing so freely in rings, when so very few other funguses are to be found, is almost enough to distinguish it. It has, however, very distinctive characters in itself in the thickness of its pileus; the narrowness of its gills, which are very closely crowded together; and the solid bulging stem. It grows in rings, has a strong smell, and appears about St. George's Day (April 23), after the rains, which usually fall about the third week in April. It continues to appear for three or four weeks, according to the peculiarities of the season. It is usually to be found on hilly pastures in woodland districts. Pileus thick and fleshy, convex at first, often lobed, becoming undulated and irregular, expanding unequally; the margin more or less involute, and at first flocculose; from 3 in. to 4 in. across; of a light yellow colour in the centre, fading to almost opaque white at the edges; it is soft to the touch; more or less tuberculated, and often presenting cracks. Gills yellowish white, watery, narrow, emarginate, *i.e.*, annexed to the stem with a little tooth (see section in illustration). This Agaric is usually nearly white, smooth, soft, and firm, like kid leather to the touch, and, as Berkeley has happily said, "in appearance it very closely resembles a cracknel biscuit." The best mode of cooking it, according to Dr. Badham, is either to mince or fricassee it with any sort of meat, or in a *vol-au-vent,* the flavour of which it greatly improves; or simply prepared with salt, pepper, and a small piece of bacon, lard, or butter, to prevent burning, it constitutes of itself an excellent dish.


True St. George's Mushroom (Agaricus gambosus).

Parasol Agaric (Agaricus procerus).—There are but two other Agarics that at all resemble this, and both are edible. One about the same size is Agaricus rachodes; but it is not generally considered so good in flavour as A. procerus. Mrs. Hussey, however, says plainly, "If Agaricus procerus is the king of edible funguses, Agaricus rachodes is an excellent viceroy." The other is the Agaricus excoriatus, a very much smaller fungus, with a more slender habit, a shorter stem, and no true bulb at the base. This elegant little fungus is also good eating. Whenever an Agaric on a long stalk, enlarged at the base, presents a dry cuticle more or less scaly, a darker coloured umbonated top, a movable ring, and white gills, it must be Agaricus procerus—the Parasol Agaric, and it may be gathered and eaten without fear. When the whitish flesh of this Agaric is bruised it shows a light reddish colour. This is one of the best of the edible fungi, so commongly passed by as useless. The pileus is fleshy ovate when young, then campanulate, and afterwards expanded and umbonate (blunt pointed), from 3 in. to 7 in. across. Cuticle more or less brown, entire over the umbo, but torn into patches or scales, which become more and more separated as they approach the margin; flesh white; gills unconnected with the stem, fixed to a collar on the pileus surrounding its top; ring persistent, loose on the stem; stem 6 in. or 8 in. high, tapering upwards from a Pear-like bulb at the root, hollow with a loose pith, whitish-brown, but more or less variegated with small and close-pressed scales. In broiling the Parasol Agaric remove the scales and stalks from the Agarics, and broil lightly over a clear fire on both sides for a few minutes; arrange them on a dish over fresh made, well-divided toast; sprinkle with pepper and salt, and put a small piece of butter on each; set before a brisk fire to melt the butter, and serve up quickly.

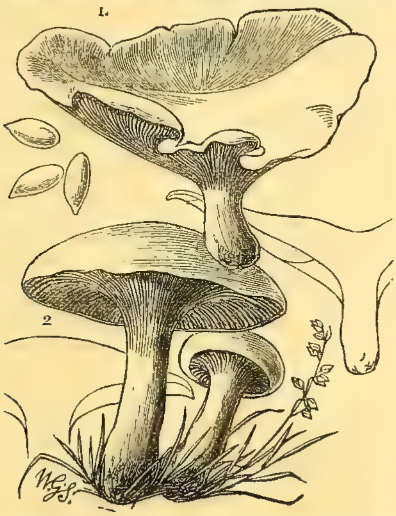

Parasol Agaric (Agaricus procerus).

Brown Warty Agaric (Agaricus rubescens).—This is very common all through the summer and autumn months; indeed, one of the most abundant of Mushrooms, and it is one of those species that a person with the slightest powers of discrimination may distinguish accurately from others. Pileus convex, then expanded, cuticle brown, scattered over with warts, varying in size; margin striate; gills white, reaching the stem, and forming very fine decurrent lines upon it; ring entire, wide, and marked with striæ; stem often scaly, stuffed, becoming hollow, when old bulbous; volva obliterated. The whole plant has a tendency to turn to a sienna-red or rust colour. This is very distinctly shown some little time after it has been bruised. It may be toasted, boiled, or stewed in the ordinary way, Place the full-grown Agarics in water for ten minutes, then drain, and, having removed the watery skin, fry with butter, pepper, and salt. The ketchup made from Agaricus rubescens is rich and good.


Brown Warty Agaric (Agaricus rubescens).

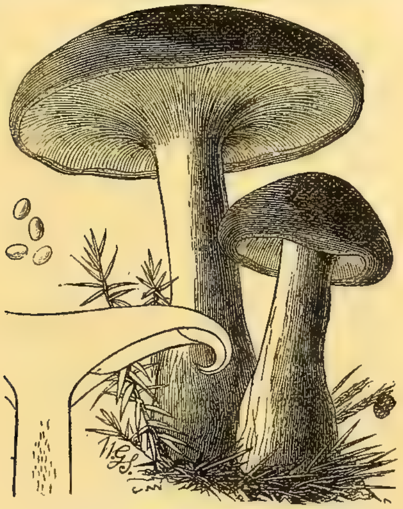
Orcelle or Vegetable Sweetbread (Agaricus orcella).—In this Mushroom the pileus is thin, irregular, depressed in the centre, lobed, with undulated borders, from 2 in. to 3 in. across. In colour clear white, sometimes tinted with pale brown on its prominences, and occasionally with a grey centre or even lightly zoned with grey. Its surface is soft and smooth to the touch, except in wet weather, when it becomes soft and sticky. The flesh is soft, colourless, and unchangeable. Gills crowded, decurrent, at first nearly white, then pinkish-grey, taking at length a light brown tint. Spores pale brown. Stem smooth, solid, short, decreasing in size; central when young, but becoming eccentric from the pileus growing irregularly. Odour pleasant, usually compared to that of fresh meal, but Dr. Badham and others think it resembles more closely the smell of a Cucumber or Syringa leaf.

Plum Mushroom (Agaricus prunulus). — There has been considerable confusion, writes Dr. Bull, between the two Agarics orcella and prunulus, some thinking that we have only orcella in England, and others only prunulus, and others again that they are both the same fungus, differing only in size. Dr. Badham and some others again confuse prunulus with gambosus, the fungus of early spring, and this has arisen from the French term "mousseron" being often applied to both these funguses; but they are so essentially different as not to be liable in any way to be mistaken for each other. A. orcella and A. prunulus are both placed together in the annexed illustration, so that their close alliance may be seen at a glance. Fries treats them as separate funguses, "in deference to ancient authority, since their differences are chiefly in degree." These differences are, nevertheless, so well marked, that they are kept separate here. Orcella is a smaller and more delicate fungus than prunulus. It is thinner and less fleshy, more undulated in its borders, and has a lighter and more agreeable odour. Orcella grows in more open glades than prunulus; it is usually much whiter in colour, sometimes in high situations white and glazed as an egg-shell, or even pottery. Orcella grows more solitary than prunulus, in light, scattered groups, showing an inclination for the neighbourhood of Oak trees, and where it does grow it may be found year after year in the same place, but seldom more than two or three in a spot. In 1869, when orcella was pretty plentiful, prunulus was not to be found in the situations where it grows usually most abundantly. Prunulus is the reverse of all this. It prefers more shaded places, is larger, more fleshy, and with a strong odour rather heavy and overpowering. It grows in greater quantities together, and not unfrequently in crowded rings from 4 ft. to 6 ft. in diameter. As edible funguses they should certainly be kept distinct. Orcella is light and pleasant in odour, and excellent in flavour; it is so delicate and tender as to be termed, not inaptly, "Vegetable Sweetbread." Prunulus, on the other hand, though always good, is to many people too strong in odour, and more coarse in taste. Orcella being usually found in small quantities, is best perhaps when broiled and served on hot toast. Prunulus will yield an abundance for broiling or stewing, or both.



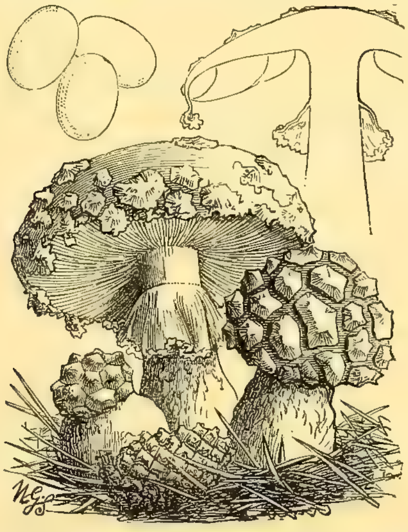
1.—Orcelle or Vegetable Sweetbread (Agaricus orcella).
2.—Plum Mushroom (Agaricus prunulus).

Clouded Mushroom (Agaricus nebularis).—This is common in certain places, but rare near London. It comes up late in the autumn on dead leaves in moist places, principally on the borders of woods. When gathered, it has a wholesome and powerful odour; and when cooked, the firm and fragrant flesh has a particularly agreeable and pleasant taste. Pileus from 2½ in. to 5 in. across; at first depresso-convex; when expanded, nearly flat or broadly subumbonate; never depressed; margin at first involute and pruinose; occasionally somewhat waved and lobed, but generally regular in form; smooth, viscid when moist, so that dead leaves adhere to it; grey, brown at the centre, paler towards the circumference. Flesh thick, white unchanging. Gills cream-colour, narrow, decurrent, close, their margins waved, unequal, generally simple. Stem from 2 in. to 4 in. long, from a quarter of an inch to 1 in. thick; incurved at the base; not rooting, but attaching by means of a floccose down round its lower portion and for one-third of its length, a large quantity of dead leaves, by which the plant is held erect; subequal, more or less marked with longitudinal pits, firm externally, within of a softer substance. This Mushroom requires but little cooking; a few minutes' broiling (*a la* Maintenon is best), with butter, pepper, and salt, is sufficient. It may also be delicately fried with bread crumbs, or stewed in white sauce. The flesh of this Mushroom is perhaps lighter of digestion than that of any other.



Clouded Mushroom (Agaricus nebularis).

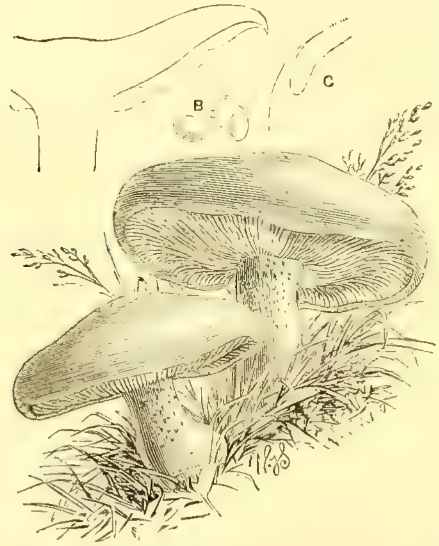
Fir-cone Mushroom (Agaricus (Amanita) strobiliformis).—This truly magnificent Agaric grows generally in Fir plantations, but may sometimes be found in grassy hedgerows under trees; though generally considered a somewhat rare Agaric, it is often abundant during the autumn months. It may be known by its almost pure white colour (slightly inclined to buff), its large patches on the pileus resembling in shape the scales of Fir cones, and its thick, solid, compact flesh and stem, and large, well developed annulus. It is closely allied to Agaricus rubescens, and the methods of cooking this species will well apply to A. strobiliformis. It may be toasted, boiled, or stewed in the ordinary way.



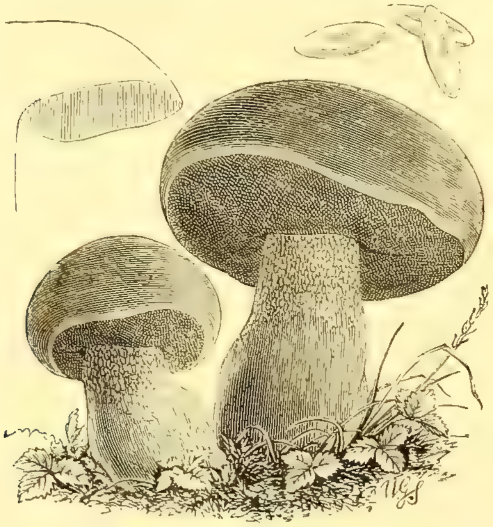
Fir-cone Mushroom (Agaricus (Amanita) strobiliformis).

Lilac-stemmed Mushroom (Agaricus (Tricholoma) personatus) —This is one of the commonest and best of all British Agarics, and there is little fear of mistaking it, when its salient characters are once known. It grows everywhere abundantly in pastures and grassy places, generally late in the autumn, and appears sometimes in immense quantities after heavy rains; at these times its flesh becomes saturated with moisture, and unfit for the table. It is said to have been sold at one time in our markets under the name of "Blewits," but of late years it has never appeared. In colour it is throughout very pale brown, almost white, or pallid buff, with the exception of the upper part of stem, which is usually tinted with a pale but lively purple shade, hence its popular name of "Blewits," or Blueits. The pileus is smooth, or greasy and bibulous, the stem solid, ringless, and slightly scaly at the purple apex; the gills have a tendency to separte from the stems, as shown at c (p. 324); hence Fries, the great Swedish botanist, some time since removed the plant to the Lepista section of Paxillus, under the name of Paxillus personatus, whilst Cooke, in his handbook, following a suggestion of Mr. Worthington Smith, elevates Lepista to a genus (on account of its white spores, as contrasted with the red spores of Paxillus) and describes one plant under the name of Lepista personata. Agaricus personatus is closely allied to A. gambosus, and the recipes for cooking the latter apply to the former, but care should be taken to gather the specimens in dry weather, and when not soddened with moisture.

Edible Boletus (Boletus edulis).—This is one of the safest and most delicious, and at the same time most abundant and long-continuing, of the British edible fungi. The first crop may be gathered soon after the rains of early summer, and the growth continues till the frosts of winter have fairly set in. There are about three dozen species of Boletus in this country, but B. edulis materially differs from all its allies; it is probable that most Boleti are either edible or harmless, but such species as B. edulis and B. æstivalis certainly stand in the first rank. This fungus has maintained a good reputation from time immemorial, and has been consumed as a delicacy in all countries of Europe for ages; not, however, in this country; but, thanks to Dr. Badham, Dr. Bull, and others, it is at last rapidly becoming a recognised article of diet with us. To distinguish it from other Boleti, the following points must be carefully noted, and when the fungus is once known, no other species will ever be mistaken for it:—It grows in woods; the cap is smooth and of a very pure and delicate shade of pale brown, often with an edge of a lighter shade, as shown in our illustration; the under surface of the top, instead of being furnished with gills like the Mushroom, has a soft, spongy substance, composed of innumerable pores or tubes (like the pipes of a miniature organ); this spongy substance is at first pure white, then sulphur coloured, at length sulphury-green; the stem is stout and fleshy, pale brown in colour, and furnished with an exquisite minute reticulation or network round the upper portion; the flesh, when broken, is snow-white, like crumbs of bread, and the taste agreeable and nutty. It should not be gathered for the table when too young, when the tubes are white, or when too old, when the tubes are green and the plant flabby; neither should specimens be used that are mildewed or soddened with rain. They are in the best condition when the tubes are sulphur-yellow. B. edulis grows to a great size, being often many inches across; it is frequently very irregular and uncouth in shape, with a swollen stem, and at times varies considerably in the colour of its cushioned-shaped top, which at times will vary from delicate fawn to dark brown. One of its best points of distinction resides in the beautiful white network round the apex of the stem. A good and simple plan of cooking is merely to remove the tubes and stem, and cut the top into slices, and fry with butter, &c., like the common Mushroom; or lay the pieces in a dish, with butter, pepper, and salt; cover the dish closely, and bake for half an hour. A few species of Boleti are either highly coloured, acrid when raw, or change to bright blue when cut or broken. Such as these, and all having the tube surface red, should be discarded.

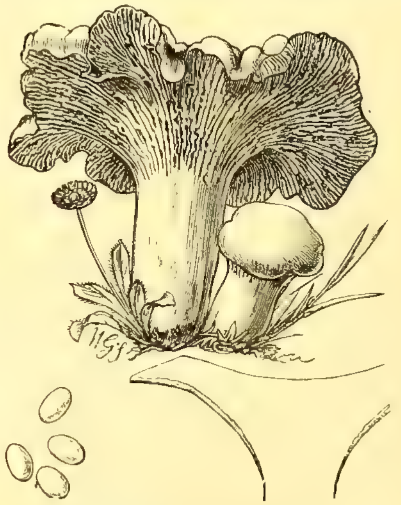


Lilac-stemmed Mushroom (Agaricus (Tricholoma) personatus).



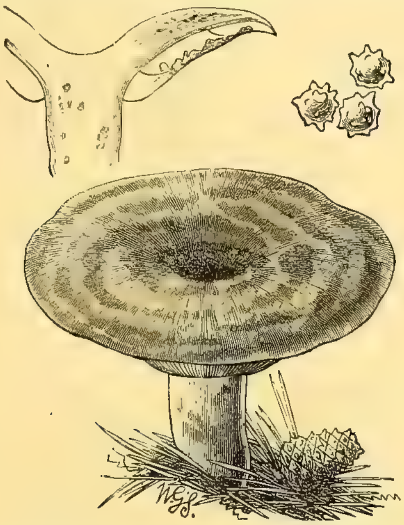
Edible Boletus (Boletus edulis).

Chantarelle (Cantharellus cibarius).—This grows sometimes sporadically, sometimes in circles or segments of a circle, and may be found from June to October. At first it assumes the shape of a minute cone; next, in consequence of the rolling-in of the margin, the pileus is almost spherical, but as this unfolds it becomes hemispherical, then flat, and at length irregular and depressed. When young its stalk is tough, white, and solid; but as it grows this becomes hollow and presently changes to yellow; tapering below, it is effused into the substance of the pileus, which is of the same colour with it. The pileus is lobed, and irregular in shape; its margin at first deeply involute, afterwards when expanded, wavy. The veins or plaits are thick, sub-distant, much sinuated, running some way down the stalk. The flesh is white, fibrous, dense, "having the odour of Apricots" (Purton) or of "Plums" (Vitt.). The colour yellow, like that of the yolk of eggs, is deeper on the under surface; when raw it has the pungent taste of pepper; the spores, which are elliptic, are of a pallid ochre colour (Vitt.). "This fungus," observes Vittadini, "being rather dry and tough by nature, requires a considerable quantity of fluid sauce to cook it properly." "The common people in Italy," says Dr. Badham, "dry or pickle, or keep it in oil for winter use. Perhaps the best ways of dressing the Chantarelle are to stew or mince it by itself, or to combine it with meat or with other funguses. It requires to be gently stewed and a long time to make it tender; but by soaking it in milk the night before, less cooking will be requisite."



The Chantarelle (Cantharellus cibarius).

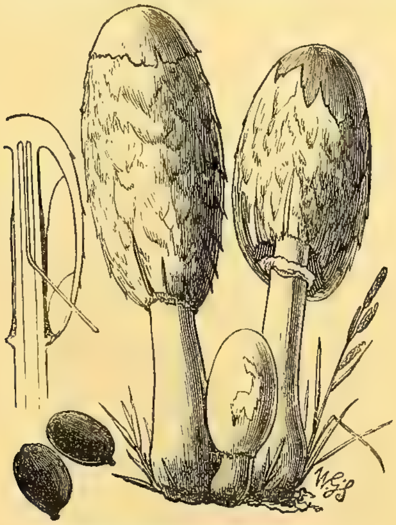
Orange-Milk Mushroom (Lactarius deliciosus).—There is no possibility of mistaking this fungus. It is the only one which has orange-red milk, and which turns green when bruised. These properties distinguish it at once from Lactarius torminosus or "necator," the only fungus which in any way resembles it. This acrid fungus (Lactarius torminosus) is somewhat similar in shape and size, and is also zoned; but the involute edges of the pileus are bearded with close hairs. It is of a much paler colour, and with gills of a dirty white. The milk, also, is white, acrid, and unchangeable in colour. The Orange-Milk Agaric chiefly affects the Scotch Fir-tree, and is generally to be found beneath the drip of the branches around the tree. It is also found in hedgerows occasionally, but is most abundant in plantations of Scotch Fir or Larch. Pileus smooth, fleshy, umbilicate, of a dull rufous orange, turning pallid from exposure to light and air, but zoned with concentric circles of a brighter hue; margin smooth, at first involute, and then becoming expanded; from 3 in. to 5 in. across. Flesh firm, full of orange-red milk, which turns green on exposure to the air, as does any part of the plant when bruised. Gills decurrent, narrow, each dividing into two, three several times from the stem to the edge of the pileus; of a dull yellow by reflected light, but being translucent, the red milk shines brightly through them. Stem from 1 in. to 3 in. high, slightly bent and tapering downwards; solid, becoming more or less hollow with age; short hairs at the base; sometimes pitted (scrobiculate). The rich gravy it produces is its chief characteristic, and hence it commends itself to make a rich gravy sauce, or as an ingredient in soups.



Orange-milk Mushroom (Lactarius deliciosus).

It requires delicate cooking, for, though fleshy, it becomes tough if kept on the fire till the juice is exuded. Baking is perhaps the best process for this Agaric to pass through. It should be dressed when fresh and pulpy. It may be fried in slices, properly seasoned with butter, or bacon and gravy; and served up hot with sippets of toast.

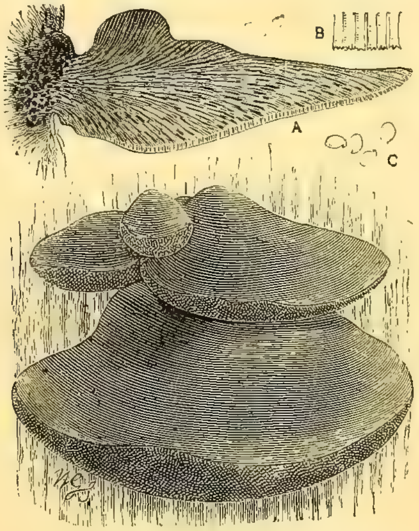
Maned Agaric (Coprinus comatus).—This very elegant Agaric has also been called Agaricus cylindricus, Schœff; A. typhoides, Bull; A. fimetarius, Bolt. It is common throughout the summer and autumn months on road-sides, pastures, and waste places. It is extremely variable in size. Its general appearance is so distinct and striking, that it cannot possibly be mistaken for any other Agaric.



Maned Agaric (Coprinus comatus).

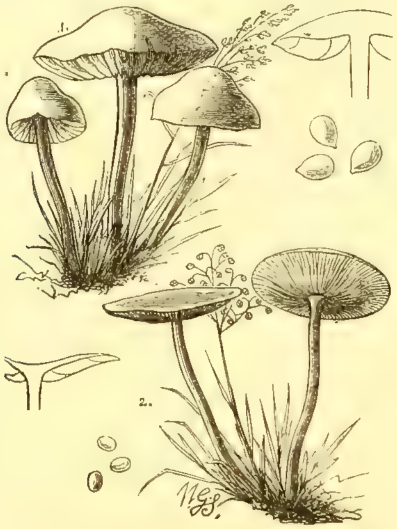
Pileus cylindrical, obtuse, campanulate, fleshy in the centre, but very thin towards the margin. The external surface is soon torn up into fleecy scales, with the exception of a cap at the top. Gills free, linear, and crowded, quite white when young, becoming rose-coloured. Stem of a pure white, 4 in. or 5 in. high, contracting at the top, and bulbous at the base, hollow, fibrillose, stuffed with a light cottony web. The bulb is solid and rooting, the ring moveable. The best and simplest method of cooking it is to broil and serve on toast in the ordinary way. It may be added also with great advantage to steaks and made-dishes, to give flavour and gravy.

Vegetable Beefsteak (Fistulina hepatica).—Although the popular name of "liver-fungus" corresponds very well with the scientific name of this species, yet we consider the name of "Vegetable Beefsteak" (aptly given to it by Dr. Bull, of Hereford) so very much better, both as regards the shape of the fungus itself and its taste, too, that we prefer to keep it here as its popular name. The taste is exceedingly like beefsteak; but it must be confessed that a well-grown specimen more resembles a great tongue than either a lump of liver or steak; hence it is known in Italy as "Lingua quercina" or "Lingua di Castagna," and in France, "Langue-de-bœuf." This fungus, which resembles a great red tongue protuding from tree-stems, when once known can never be mistaken for any other species. It generally confines itself to old (and often prostrate) Oaks; but in Epping Forest it is not uncommon on the Beech. We have also seen it more than once on the Ash; and it has been observed on the Chestnut, Walnut, Willow, and other trees. We have tasted it from various habitats, but have never been able to detect the least difference in the flavour. Although such a large fungus, its growth is very rapid, soon appearing and again disappearing, on ancient trunks in the autumn. When cut, broken, or bruised, it distils a copious red juice like beef gravy. "When grilled," says Dr. Badham, "it is scarcely to be distinguished from broiled meat;" and Berkeley describes it as "one of the best things he ever ate, when prepared by a skilful cook." There is a very slightly acid flavour in the fungus when cooked, which adds considerable piquancy to the dish; it is extremely tender, succulent, and juicy. Of course, it should be gathered when quite young, fresh, and clean, and at once prepared for the table in the following manner:—Wash and dry, and cut into quarter-inch slices half-an-inch wide, soak in scalding water for five minutes, and stew with butter and herbs; yolk of egg may then be added, and serve hot; or simply stew with a good steak, adding a scallion and Parsley, salt, and pepper. For Fistulina ketchup, slice and macerate with salt, and, says Mrs. Hussey, serve "with a little lemon juice and minced Shallots, with a broiled rumpsteak."



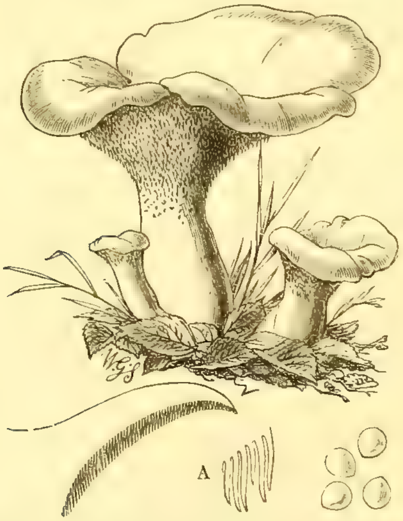
Vegetable Beefsteak (Fistulina hepatica).

Fairy-ring Champignon (Marasmius oreades).—Champignon is a name applied in France to edible fungi in general, or, if specifically, it indicates more especially the common Mushroom. The subject of our illustration is an early species, seldom produced in any quantity late in the season. When of a good size, and quickly grown, it is perhaps the best of all Agarics. It is so common in some districts, that bushels of it may be gathered in a day, and even on our lawns it is by no means uncommon, where, as well as in old pastures, it generally appears in broad, brown patches, either circular or forming portions of a circle. M. urens, the only species with which it can be confounded, the most acrid of all allied funguses, usually grows in woods, though sometimes in the fairy-ring. However, its flat top and narrow crowded gills cause it to be readily distinguished anywhere. Pileus smooth, fleshy, convex, subumbonate, generally more or less compressed, tough, coriaceous, elastic, wrinkled; when water-soaked, brown; when dry, of a buff or green colour, the umbo often remaining red-brown, as if scorched; gills free, distant, ventricose, of the same tint as the pileus, but paler; stem equal, solid, twisted, very tough and fibrous, of a pale silky-white colour. When cut in small pieces and seasoned, it makes an excellent addition to stews, hashes, or fried meats, but it should only be added a few minutes before serving, as the aroma is dissipated by over cooking. It is the Mushroom used in the French *à la mode* beef shops in London.



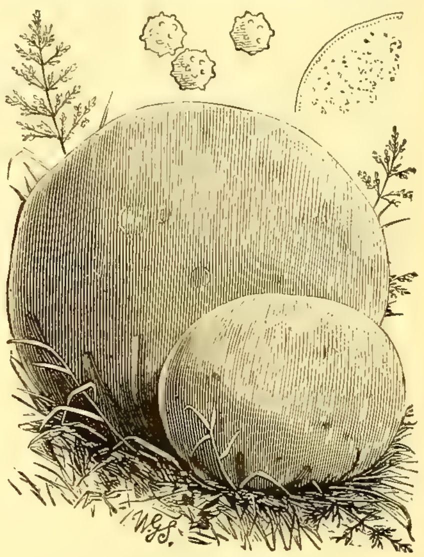
Fairy-ring Champignon (Marasmius oreades).

Hedgehog (or Spine-bearing) Mushroom (Hydnum repandum).—There is no possibility of mistaking this Mushroom; when once seen it is always to be remembered. Its awl-shaped spines are crowded beneath the pileus; its size and colour are most marked; it closely resembles a lightly-baked cracknel biscuit in colour. "This fungus," says Badham, "occurs principally in woods, and especially in those of Pine and Oak; sometimes solitary, but more frequently in company and in rings." Pileus smooth, irregular in shape, depressed in centre, more or less lobed, and generally placed irregularly on the stem (eccentric); of a pale buff or cinnamon colour; from 2 in. to 5 in. in diameter. Flesh firm and white; when bruised it turns slightly brown. Spines crowded, awl-shaped, slanting, soft, and brittle, varying in size and length, and of a faint cinnamon tint. Stem white, short, solid, crooked, and often lateral. When well stewed it is an excellent dish, with a slight flavour of oysters. Cut the Mushrooms in pieces and steep them for twenty minutes in warm water; then place them in a pan with butter, pepper, salt, and Parsley; add beef or other gravy, and simmer for an hour.



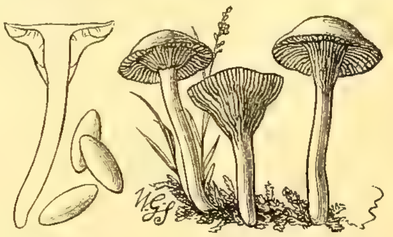
The Hedgehog (or Spine-bearing) Mushroom (Hydnum repandum).

Giant Puff-Ball (Lycoperdon giganteum).—Dr. Bull, of Hereford, states that the Puff-Balls are edible when young; and we consider the Giant Puff-Ball to have a great pre-eminence over all the others. It may be at once known by its great size, commonly measuring 1 ft. in diameter, its snow-white colour, and its texture like the finest white kid leather, with the skin frequently breaking into minute areæ. It grows with great rapidity, and is common in rich pastures, gardens, and orchards, usually irregularly scattered, but occasionally growing in enormous fairy-rings. When the interior of the Puff-Ball is perfectly white and firm, it is fit for the table. We consider the allied species not worth experimenting upon. It generally happens that a single good-sized Puff-Ball is far too large for a single day's consumption. Should the plant, therefore, be found growing in a garden or any similarly convenient place, the better plan is to cut a few slices off the living plant, and let the bulk remain growing. By these means, as Vittadini says, one may have a *frittura* every day in the week. The best authorities agree in stating that no French omelette is half so good in richness and delicacy of flavour as the Puff-Ball omelette. Dr. Curtis, of South Carolina, calls it the "South Down" of Mushrooms, and says, "it has a delicacy of flavour superior to any omelette ever eaten." Cut slices a quarter of an inch thick, and fry with butter; then spread over them Raspberry jam or jelly, or any similar sweet, and serve hot. For fritters, cut slices half-an-inch thick; dip in yolk of egg; sprinkle with pepper, salt, and sweet herbs; fry in fresh butter, and serve hot. The Giant Puff-Ball is one of the lightest, most digestible, and delicious of all fungi.



Giant Puff-Ball (Lycoperdon giganteum).

Viscid White Mushroom (Hygrophorus virgineus).—This species, exquisite in form and flavour, is one of the prettiest ornaments of our lawns, downs, and short pastures at the fall of the year. In these situations it may be found in every part of the kingdom. It is essentially waxy, and feels and looks precisely as if made of the purest virgin wax. The stem is firm, stuffed, and attenuated, and gills singularly distant from each other; it changes colour a little when getting old, at which time it is unfit for culinary purposes. A batch of fresh specimens, broiled or stewed with taste and care, will prove agreeable, succulent, and flavorous eating, and may sometimes be obtained when other species are not forthcoming. Several allied species enjoy the reputation of being esculent, notably



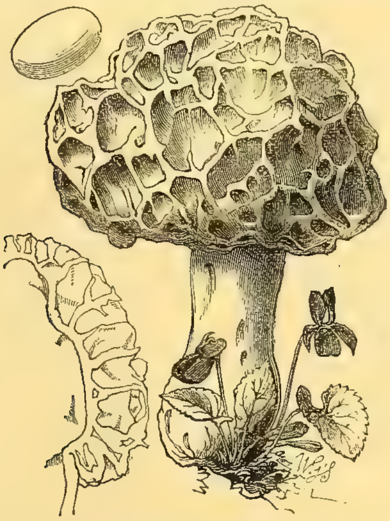
Viscid White Mushroom (Hygrophorus virgineus).

H. niveus; and report speaks favourably of H. psittacinus—a highly ornamental yellow species, with a green stem, sometimes common enough in rich pastures (and *said* to be very suspicious). Pileus fleshy, convexo-plane, obtuse, moist, at length areolato-rimose; stem stuffed, firm, short, attenuated at the base; gills decurrent, distant, rather thick.

Hygrophorus pratensis is very common on downs and short pastures. Pileus tawny or deep buff, sometimes nearly white. Probably esculent. Pileus convexo-plane, then turbinate, smooth, moist; disk compact, gibbous; margin thin; stem stuffed, even, attenuated downwards; gills deeply decurrent, arcuate, thick, distant.

Hygrophorus pratensis.

Morel (Morchella esculenta).—This, on account of its nutritive qualities, its fine aroma, and its delicacy of flavour, is entitled to rank high as an article of diet. It grows wild in woods, chiefly Pine woods, preferring a sandy soil. Morels may be quickly and satisfactorily dried without losing any of their aroma; the plan adopted is to attach them by their stalks to a string, and hang them up in some airy place. In this way they may be preserved until the new crop makes its appearance.



The Morel (Morchella esculenta).

Mushroom Ketchup.—Place Agarics of as large a size as you can procure (not worm eaten), layer by layer in a deep pan, sprinkling each layer as it is put in with a little salt; the next day stir them up several times so as to mash and extract their juice. On the third day strain off the liquor, measure, and boil for ten minutes, and then to every pint of the liquor add ½ oz. of black pepper, ¼ oz. of bruised Ginger root, a blade of Mace, a Clove or two, and a teaspoonful of Mustard seed; boil again for half an hour, put in two or three Bay leaves, and set aside till quite cold; pass through a strainer and bottle, cork well, and dip the ends in resin. A very little Chili vinegar is an improvement, and some add a glass of port wine or a glass of strong ale to every bottle. Care should be taken that the spice is not added so abundantly as to overpower the true flavour of the Mushrooms.

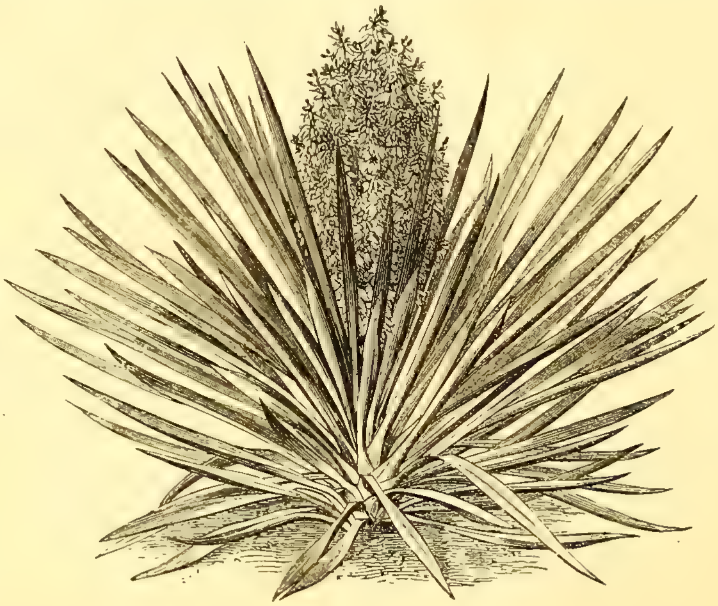
The Vine in London.—We noticed lately a handsome wreath of Vine foliage around the inside of a window near Portland Place. The plant grew in a pot, and the leaves had assumed their rich autumn hues.

SOME TEACHINGS OF THE PAST AND PRESENT SEASONS.

Vegetables of all kinds have been wonderfully fine this year, even Cauliflowers, which in some soils are often very inferior. Throughout August and September they have been this year exceptionally good. This is due to the abundant rains and the cool atmosphere which generally accompanies such weather. In many gardens last year at this time everything in the way of vegetables had been so stunted and dwarfed by drought, that the supply of Cabbages even had fallen off. The chief lesson to be learned from a study of this contrast is, that it is impossible to grow good vegetables in a dry season without some better means of obtaining and supplying moisture than are commonly met with at present. No doubt better cultivation, greater depth of soil, and a more frequent stirring of the surface with hoe and fork will do much to mitigate the effects of severe drought; but where it is possible to obtain a good supply of water for irrigating purposes, better crops would certainly be obtained. Wherever there is a pond on a higher level, a pipe laid from it through the gardens would give not only a good supply of water, but also the necessary pressure for its distribution; and in such cases the outlay, in proportion to the benefits derived, would be so small, that scarcely any valid excuse can be urged for not adopting it. A small hydraulic ram by the side of a running stream or river, where the necessary weight of water could be dammed up, and where the waste water could get away on a lower level, would insure an ample supply. By these and similar means the water that now finds its way through the drains and watercourses to the rivers, and finally to the sea, might be arrested in its course and passed through the parched soil again and again. And not only is this feasible, but it would also pay; in fact, it never does pay to do things grudgingly, or half-do them; and a good supply of water and a ready means of applying it is one of the greatest essentials in gardening, not only in one department, but in all. Fruit trees, especially wall trees, do not get half enough water in a dry season. I know a case in point that often comes under my own observation. In the garden I am referring to there are two walls covered with Peach trees. One is within a few yards of a supply of water, and the other some distance off. In the one case it was possible during the drought of last summer to give the trees a fairly liberal supply of water, but in the other it was not; and the result is the trees that were well watered during the drought have carried a good crop of fruit, whilst, with one or two exceptions, the crop on the other wall was a scanty one. The inference I draw is this, that a proper supply of food during the growing season is of as much, or indeed of more, importance to the building up of wood that will produce strong healthy blossoms, than the question of its maturation—important though most fruit growers admit this to be. Vegetable physiologists tell us that plants and trees absorb or imbibe their food either in a liquid or gaseous form; and if a sudden period of severe drought sets in, when the plants are in the midst of their growth, a check follows, more or less intense according to its duration and severity. The summer of 1876, or rather I should say the month of July and the first days of August, were excellent for the intensity of their heat and drought; but where water could not be freely given and mulching applied, the growth of all things came to a sudden standstill. Then again, when the change came there was a long time of warm, damp weather, which kept everything in a state of unnatural excitement till long after the usual period for the leaves to fall. Although the blossoms of all kinds of fruit trees last spring were most abundant, it was evident to those who took the trouble to look at things closely, that they were generally small, weakly, and ill-formed, giving clear evidence of lack of nutriment at some period during their formation; and, after all, what is termed ripening or maturation is only a continuation of the building-up process and of the growth. If its early progress has been stunted and starved from want of proper and sufficient nutriment, the whole economy of the tree is thrown out of gear for that season at least. Examining closely into the condition of the fruit trees generally, there is, I think, a good prospect for a fair return next year. The trees have had a favourable time for making their growth, and we are now getting bright, breezy, ripening weather, that will plump up the buds, and mellow the foliage in a steady, regular manner, which will tell its own tale next spring.

E. Hobday.

Trumpet Creeper (Tecoma radicans sanguinea præcox).—Among the hardy climbers that deserve high rank are the Bignonias, or, more properly, Tecomas. Their rapid growing, woody stems, bright foliage, and richly coloured flowers have acquired a well-deserved reputation for beauty and practical qualities; but their very vigour, a good trait in itself, may become a nuisance unless checked and trained by systematic pruning. All species of Tecoma possess both beauty and vigour, but in the quality of hardiness a decided distinction should be made. They come from all parts of the globe, and their habits vary accordingly; but my object at present is to notice only one variety of a certain hardy species. T. radicans is the hardiest and best known of all, and is only surpassed by grandiflora, because of its grander and more open flowers; in hardiness, the latter is decidedly inferior. T. radicans shows a bright red colour, and a narrow, straight form of the trumpet-shaped corolla, quite peculiar and distinctive. In date of blooming it differs but little from T. grandiflora, and otherwise comports itself like a near relative. There is, however, a variety of radicans called sanguinea præcox, the superior qualities of which have received slight recognition. Several nurseries in this country offer in their catalogues a variety of radicans variously termed sanguinea, atrosanguinea, and coccinea. I suppose this to be the same as the one to which I refer, although our name comes from Belgium. Garden varieties are frequently somewhat mixed, and botanists give but little attention to the adjustment of the names of these minor forms. I select the Belgian name as more descriptive, and hence much better, especially as those of our catalogues fail to mark two distinctive peculiarities of the climber in question—namely, that it excels all others alike in early blooming and rich colour. While grandiflora and radicans bloom in August, sanguinea præcox commences to display its deep red flowers early in July. This extension of the season wherein we may look for flowers on the various species of climbers, is of much importance to those wishing to increase the number of floral effects on their lawns at any given period, especially when that period is not prolific of flowers, as is the case in July. The lover of plants will thus find the study and employment of some apparently insignificant variety productive of most agreeable results.—Samuel Parsons, in Country Gentleman." [The early variety mentioned above would probably be more valuable than the older forms in our gardens.]



Rigid-leaved Yucca (Y. Treculeana).

Effects of the Late September Frosts.—The sharp frosts which we had on the 23rd and 25th ults. have been productive of a large amount of damage to tender vegetables—especially Marrows and Runner Beans. The first frost, although very white, did little harm, but the latter one succeeding a very warm, sunny day, literally destroyed the Runner Beans in all directions, and cut short their productiveness for the rest of the season; although they were so full of growth and fruit that market gardeners were looking forward to several further good pickings. Marrows also were injured beyond recovery, many good fruit fit to cut having been spoiled. Here, among tender flowers, Balsams have suffered most, although not killed, and it is probable with a continuance of mild weather they will still mature seed. Curiously enough such tender plants as Tropæolums are scarcely injured, and Marigolds are also but little touched. The African and dwarf French kinds are a blaze of bloom, and show how very effective they are as autumn border plants. Full grown plants of the dwarf section are about 12 in. in height, from 18 in. to 20 in. in diameter, and literally covered with large double flowers of various hues and markings. Tomatoes on walls and fences are but slightly injured by frost, but they are showing here and there evidences of the same disease that effects the Potato: the best remedy for which is planting out good strong plants as early as it is safe to do in the spring.—A. D., *Bedfont*.

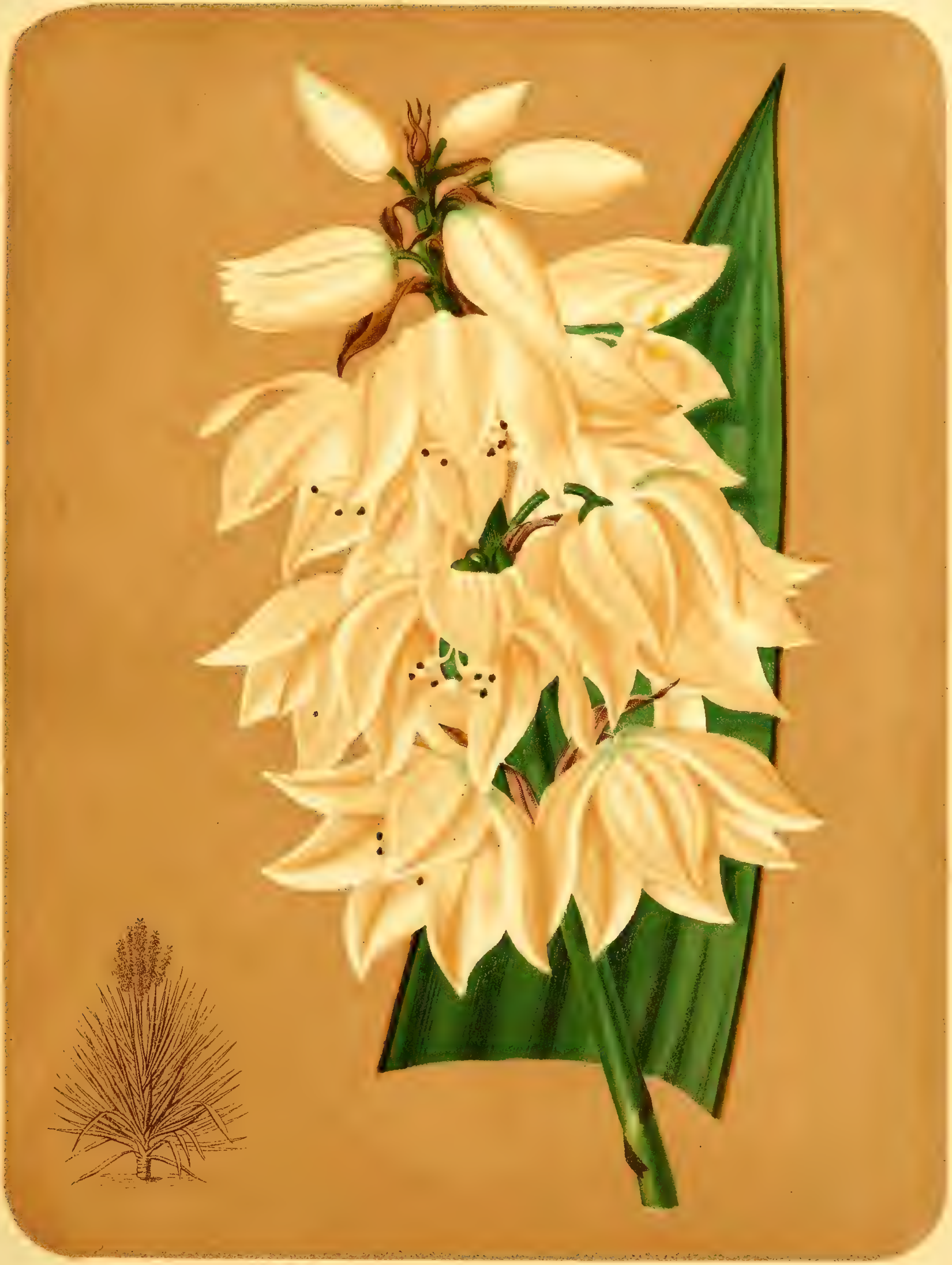
Clethra alnifolia.—This sweet and graceful shrub is most valuable for flowering now, when flowering shrubs are so rare. It is a shrub that inhabits moist places in North America, is quite hardy, and too seldom seen in our gardens.

PLATE XCIV.

RIGID-LEAVED YUCCA.

(Y. TRECULEANA).

We have treated so fully of Yuccas in previous numbers of The Garden, that only the very remarkable merit of this fine, hardy species can justify our illustrating it. As regards habit, apart from the flowers, we believe it to be the most stately hardy plant introduced to our gardens for many years. Those who have seen the specimen, which for several years has grown in the little square garden in the Royal Exotic Nursery at Chelsea, will probably heartily agree with the above estimate of this plant. It was discovered and collected by Mr. Trecul, who travelled in Texas during the years 1848 and 1849, under the auspices of the French Government. It was introduced by this traveller into French gardens, and M. Carrière briefly described it in the "Revue Horticole," naming it after its discoverer; but at that date—1858—its flowers were unknown. Its foliage, however, is so handsome that M. Carrière was quite justified in giving it a name without waiting for it to produce flowers. Writing at that time he says:—"If not the handsomest of the genus, it has at least no rival among the stemless species." It has proved to be not a stemless species, but one of the tallest of the genus. In 1859 it flowered in the open air at Charenton, in France, where it proved perfectly hardy. Vigorous young plants bore rigid leaves between 4 ft. and 5 ft. long, and the inflorescence of the plant figured was about 4 ft. long; but it had previously been imported into this country by Mr. Wilson Saunders, with whom it flowered at Reigate in 1860. The late Sir William Hooker, not being aware of M. Carrière's publication of the species, gave it the name of Yucca canaliculata, in allusion to the deeply channelled leaves; but this character is not so pronounced in older cultivated plants, though Dr. Englemann gives it, in his notes on the genus, as common to the wild specimens. I may say here that I am indebted to Dr. Engelmann's notes for the bulk of what follows. Trunk tall, branching; leaves very long and very rigid, deeply concave-channelled, margin tinged with brown or reddish-brown, minutely toothed or entire, at length slightly filamentose, spiny-pointed, rough on the under surface; panicle very dense, and nearly sessile, the lower bracts large, ovate, or ovate-lanceolate, furnished with sharp, woody points, whitish in the wild specimens, the upper ones white. In its native country this species has a trunk 6 ft. to 15 ft. high, or sometimes from 20 ft. to 25 ft. high, and 1 ft. in diameter, terminating in several branches, each one bearing a crown of long, rigid leaves, and often a panicle (2 ft. to 4 ft. long) of something like 500 flowers. Leaves longer than in any other species, $2\frac{1}{2}$ ft. to $4\frac{1}{2}$ ft. long, 2 in. to $3\frac{1}{2}$ in. wide when flattened out, deeply channelled, and quite semi-circular in section. The short peduncle or scape of the inflorescence is 1 in. to 2 in. in diameter, and the bracts very large and conspicuous in the wild specimens, being 4 in. or 5 in. long, and 1 in. to 3 in. wide, and always white or whitish. The flowers vary from 2 in. to over 4 in. in expansion, and are remarkable for the taper-pointed segments. The fruit is a pulpy cylindric, or rather indistinctly six-sided, somewhat sulcate and three-lobed,



RIGID YUCCA (Y. TRECULEANA).

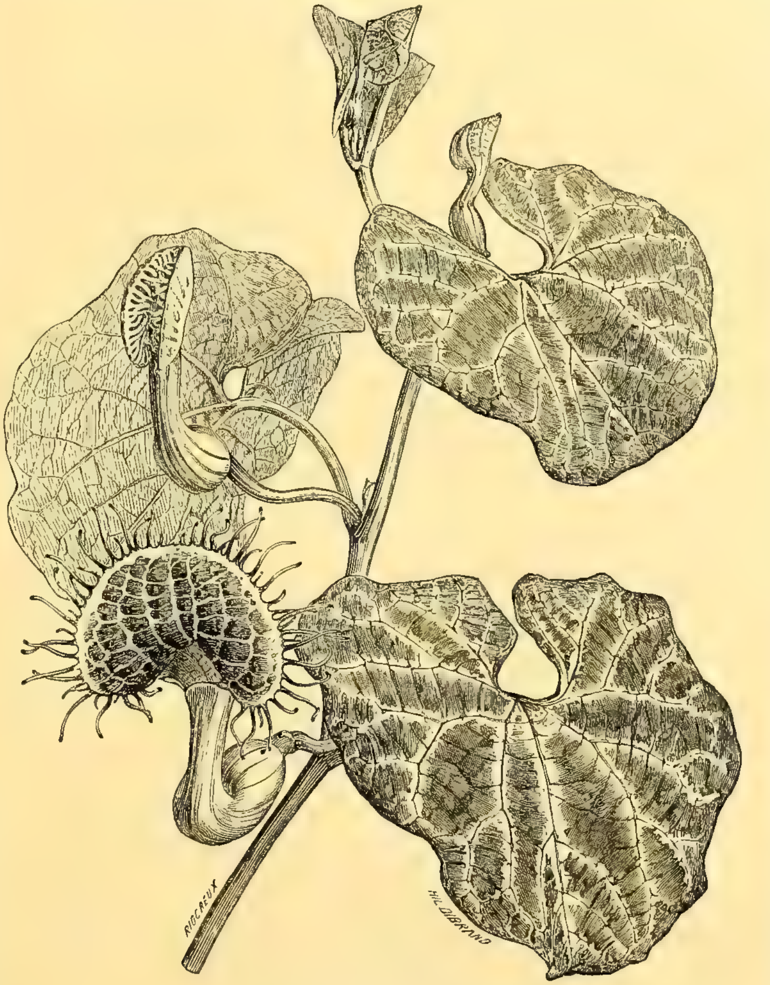
strongly-beaked berry, 3 in. to 4 in. long, and about 1 in. thick. It is of a bitter-sweetish taste, and much relished by the Indians, who prepare it by roasting and removing the acrid rind. Judging from the descriptions of it, both in a living and dried state, and what I have seen of young plants, there is no doubt this is one of the finest species of the genus in cultivation, or, indeed, in existence. As to its hardiness, I am not able to say that it has been fully proved; and from the position of its native country, it is not likely to be perfectly hardy in the climate of London, though it may withstand our ordinary winters. Mr. Saunders treated it as a greenhouse plant, and the specimens I have seen in the open air were protected during the winter. It is a native of Texas, from the Matagorda Bay and the Brazos and Guadaloupe rivers, south and south-westward into Mexico, as far as Saltillo, Parras, and Chihuahua, on the sea beach and in the interior, on the gravelly, overflowed banks of streams, and on the stony declivities of their slopes, flowering in April and May. It has been collected in the different localities named by Lindheimer and Drs. Wislizenus and Gregg.

W. B. Hemsley.

Tritoma Macowani.—Mr. A. Dean has, in a contemporary journal, under the heading of "Tritonia" Macowani, criticised the plate we published of this valuable plant, which we believe we were the first to illustrate. "A recent figure of the flower," he says, "gives a very poor idea of the size of its spike and its form and beauty, as in the plate the flower is represented almost as an inverted cone, whereas it is really the reverse, and differs but slightly from the spikes of that well-known kind, 'Tritonia' Uvaria." The plate in question, however, is not an untrue representation of the plant, which sometimes assumes the form shown in the figure late in the season. When a new plant first flowers it is not always possible to secure blooms in the best state for illustration. Ours was drawn last year, and the drawing is a perfectly faithful representation of what the introducer (Mr. Green) sent us. We felt pleasure in popularising such a remarkably good plant, and did it much better than new plants are generally done.

Sandersonia aurantiaca.—This is a great rarity and a very desirable plant. It is easily grown, but wants attention. When in a dormant state it ought to be kept beneath a greenhouse shelf, and water must be carefully withheld.—Max Leichtlin.

Mignonette the Year Round.—In order to get a constant supply of Mignonette, seeds should be sown at least three times in the year—early in spring for a summer bloom, at Midsummer for an autumn and early winter cutting, and early in September, in pots, for a supply early in spring; of course the latter must be grown in frames or in a cool house, but the value of a dozen potfuls or so of well-grown Mignonette can hardly be over-estimated. The white-flowered kinds are the best, as the colour is much more pleasing than that of the red-flowered varieties.—D.



The Fringed Birthwort (A. fimbriata).

THE INDOOR GARDEN.

BIRTHWORTS (ARISTOLOCHIAS).

The genus Aristolochia is a very large one, being represented by about 200 species, of which by far the greater number come from Tropical America. In North America, Europe, and India a few are found, and one, A. indica, is common to the latter country and Australia. Of late years some extraordinary species have been discovered in Tropical Africa, one of which is described below. Botanically the genus is of very great interest, but from a gardening point of view (considering its size), it is not of great importance. Many of these plants attain too great a size to be cultivated in any but large houses, and the generally dingy colour of their flowers, together with (in many instances) their disagreeable odour, does not recommend them to the general horticultural public. We now give a list of a few select species worthy of being more widely known, with notes respecting the particular requirements of each. We have selected them from different sections of the genus, so that any one wishing to know more of these peculiar plants can choose them with flowers of very dissimilar forms.

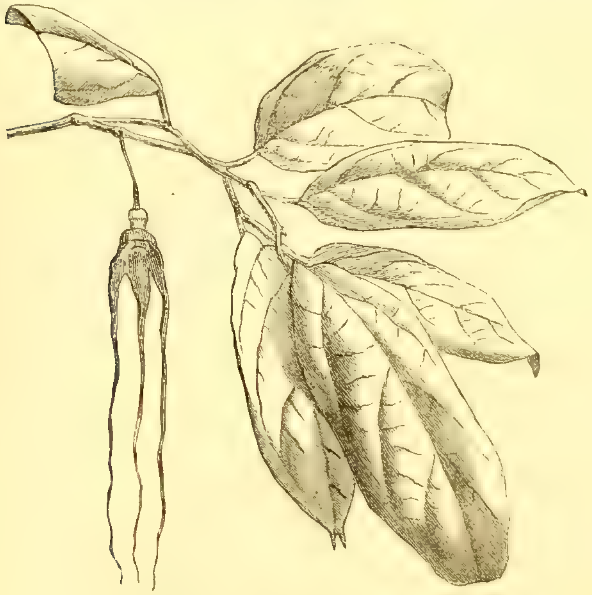
The Virginian Birthwort (Aristolochia serpentaria).—A perennial herb with a short horizontal rhizome. The flowering stems are about 1 ft. in height; the entire, minutely-pubescent leaves are from 2 in. to 3 in. long, usually ovate; the solitary flowers are a little less than 1 in. in length, and are borne on rather long, flexuose stalks; the perianth is tubular, of a dark brownish-purple colour. This species, which flowers in June and July, and whose singular blossoms are more or less buried in the loose soil and dead leaves near the root, was one of the first introduced into this country, and yet it is very rarely met with. According to Aiton's "Hortus Kewensis," it was cultivated as early as 1632. In the United States it grows in moist fertile woods. At one time it was of great repute as a cure for the bites of venomous serpents, as may be inferred from its common names Snakeroot, Viperine, and Colubrine, but in such cases it is no longer regarded as of any remedial value. It is perfectly hardy, but requires a moist shady position.

The Fringed Birthwort (A. fimbriata).—The reniform leaves of this plant are characterised by the nerves being surrounded on the upper surface by whitish zones, this coloration being due to the presence of a film of air under the epidermis. They are quite glabrous, glaucous underneath. The outside of the perianth is greenish, interior brown-purple crossed with greenish veins. The half-climbing stems grow from 1 ft. to 2 ft. high, and the flowers are produced in July and August. Being a native of Brazil, &c., this does best in a warm house.

The Broad-leaved Birthwort (A. Sipho), is probably in this country the best known of all the genus. It has deciduous, very large, glabrescent leaves, and small, yellow and purple-striped flowers. It is from North America, and in its wild state is often found climbing to the tops of high trees. For quickly covering unsightly objects, this is invaluable, and trelliswork, arbours, &c., can be made almost impervious to the summer rain by training over them the long branches of this vigorous climber. From the syphon-shaped flower it has received its Latin name, as also the English ones, Pipe Vine and Dutchman's Pipe.

The Snake-killing Birthwort (A. anguicida).—A climbing plant with long, slender, twining stems, and distant, entire leaves on rather long, slender petioles. The flowers in shape are somewhat like those of the European A. Clematitis, and are borne singly on peduncles nearly as long as the leaves. The base of the perianth is inflated, globose, nearly white, the rest of tube funnel-shaped, white, netted and spotted with brown. The natives of South America employ this just as the A. serpentaria is used in North America, for the cure of snake bites. Jacquin assures us that the odour of the root has the faculty of driving away serpents when they approach this plant, and that the juice applied to the recent bite of a serpent, or taken internally, infallibly cures the patient. Ordinary stove treatment will suit this species.

The Three-tailed Birthwort (A. tricaudata).—An arborescent evergreen shrub with jointed branches swollen at the nodes. The deep green leaves are acuminate, from 5 in. to 8 in. long. The flowers, which are produced in August, are of a maroon-red colour outside and very dark purple-brown inside, and (as seen in the drawing) the lower margin is split into three diverging subulate tails, which attain a length of 4 in., and are of the same colour as the outside of the perianth. Ghiesbreght discovered this plant in the forest of Chiapas in the extreme east of Mexico, and sent it to Verschaffelt, of Ghent. It requires stove temperature and will flower well in a small state. This species is nearly or altogether scentless.



Three-tailed Birthwort (A. tricaudata).

The Bird's-head Birthwort (A. ornithocephala).—A large, climbing Brazilian shrub, with cordate-reniform leaves. The large perianth is a dingy whitish-yellow, marked with dark purple reticulations; the inflated tube and upper lip bear a striking resemblance to a bird's head, whence the specific name. This is much too large for pot culture; where it can be planted out in a warm house, as it is in the Palm-house at Kew, it will soon clothe pillars or rafters, and produce abundantly its peculiar flowers.

The Large-flowered Birthwort (A. grandiflora).—This species, figured and described long ago in the "Botanical Magazine," seems to have been lost to English gardens. Until the recent introduction of an African species, A. Goldieana, the flower of this plant was often quoted as next, in point of size, to the gigantic Rafflesia Arnoldi, which is the largest of known flowers. Like that, it possesses a disgusting odour, and the general tone of colour, too, is the same. The young buds are much bent, and have the appearance of the head and beak of a pelican when that bird is at rest. The expanded limb of the perianth is terminated by a tail sometimes more than 18 in. in length. Dr. Lunan relates in his "Flore des Antilles" that a whole herd of swine were poisoned by eating the roots and young leaves of this plant. From this it derives its English name, Poison Hog meat. Mr. Myers was often led to compare the large, flaccid blossoms on the bushes to coloured pocket handkerchiefs laid out to dry. It is a native of the West Indies and South America.

The Pale-nerved Birthwort (A. leuconeura).—This is a large-sized climber, with leathery, cordate, glabrous leaves, which are seven-nerved; nerves pale-coloured on a deep green ground. The dark chocolate-purple flowers are beautifully marked with pale yellow, and are produced in clusters from near the base of the old, corky trunk. This requires a warm temperature. It was introduced into Europe from New Granada a few years ago by Linden.

Duchartre's Birthwort (A. Duchartrei) is a very curious and showy species, and is allied to the last-named, though it produces much handsomer flowers. It was discovered on the Upper Amazons, in 1866, by M. Wallis, whilst collecting for Linden. It is a medium-sized climber, with a grooved, corky stem, and slender, annual branches; the flowers are produced from the old wood in short racemes; the perianth extends into a funnel-shaped limb (the mouth of which is 2½ in. to 3 in. in diameter), cream-coloured, with large, irregular, purple blotches. It will succeed well as a pot plant, provided the long branches be trained up a rafter, and water be rather sparingly administered during the season of rest.

The Common Birthwort (A. Clematitis).—This is sometimes met with on ruins, &c., from York southwards, but is not truly indigenous to this country. It is a perennial, growing from 1 ft. to 2½ ft. high; the leaves are from 3 in. to 6 in. in diameter, broadly cordate, glaucous beneath; the small yellow flowers grow in clusters of from four to eight, from June to September. It is an excellent plant for the wild garden. Philip Miller says "it is a terrible plant for creeping at the root . . . therefore it should be planted in some abject part of the garden, and it will thrive in any soil and situation."

The Glaucous-leaved Birthwort (A. glauca) is a Mediterranean species, which will succeed in warm, sheltered spots in the open border, though it is perhaps safer to treat it as a wall or cool-house plant. Its glaucous leaves and dark purple flowers on long, nearly straight peduncles, render this a very distinct species.

The Rev. Hugh Goldie's Birthwort (A. Goldieana).—Two botanic gardens at least in this country can boast of possessing this extraordinary plant, viz., Kew and Glasgow. From the latter place material for the plate in the "Botanical Magazine" was procured. The flowers are enormous, the one figured having measured 26 in. by 11 in. The perianth externally is greenish, barred and veined with maroon-red; the inside is reddish-brown, marked and splashed with orange-yellow. It is named in honour of the Rev. Hugh Goldie, of the United Presbyterian Missionary Society, and living plants were first sent to Great Britain by him from the Old Calabar River. Gustav Mann also found it near Sierra Leone. Plenty of heat and moisture are required for this plant. G.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Large-flowered Jasmine in Autumn.—This is one of the most useful of indoor plants at this season. Its pure white, sweetly-scented flowers are invaluable in a cut state, and either in pots or planted out it flowers freely if liberally treated. It is now being largely grown by London florists for furnishing cut blooms during autumn and winter, and it is highly valued in the market. Plants of it, which are best obtained by means of layers, grow well in rich sandy loam and leaf-mould, or well-rotted manure, intermixed with a few pieces of peat to keep the compost open.—C. S.

Propagating Dracænas.—The most expeditious and surest way of rooting the tops of Dræcenas is to insert them in bottles of water, in a temperature of 74°. In this manner they strike root in about ten days, and failure seems impossible. Old stems, too, cut into pieces of 1½ in. in length, and inserted in pots of soandy soil, soon make shoots and form roots, if plunged in a strong bottom heat. They should be potted singly before the roots of the different cuttings have had time to come in contact, or injury on division would be inevitable.—W. W. H.

Three Good Begonias.—The most perfect white-flowered Begonia yet raised is now in good condition in Messrs. Veitch's nursery at Chelsea. Even small plants of it in 4 in. pots bear numerous spikes of pearly-white blossoms, above a mass of stiff-green foliage resembling that of B. Veitchi. It is appropriately named Queen of the Whites. In Messrs Lee's nursery, at Hammersmith, are two coloured kinds well worth notice, viz., B. Boltoni, a brilliant crimson-flowered kind of good substance; and B. Dodwelli, a rich salmon-coloured variety. These three kinds are very distinct and well deserve a place among indoor plants.—S.

THE GARDEN-CRAFT OF SHAKESPEARE.

(*Concluded from p.* 307).

IV.—Gardening Operations.

A.—Pruning, &c.

(1) *Orlando.* But, poor old man, thou prunest a rotten tree,
That cannot so much as a blossom yield
In lieu of all thy pains and industry.
As You Like It, act ii., sc. 3.

(2) *Gardener.* Go, bind thou up yon dangling Apricocks,
Which, like unruly children, make their sire
Stoop with oppression of their prodigal weight:
Give some supportance to the bending twigs.
Go thou, and like an executioner,
Cut off the heads of too fast growing sprays,
That look too lofty in our commonwealth:
All must be even in our government.
You thus employ'd, I will go root away
The noisome weeds, which without profit suck
The soil's fertility from wholesome flowers.

. . . . .

O, what pity is it,
That he had not so trimm'd and dress'd his land
As we this garden! We at time of year
Do wound the bark, the skin of our fruit-trees,
Lest, being over-proud in sap and blood,
With too much riches it confound itself:
Had he done so to great and growing men,
They might have lived to bear, and he to taste
Their fruits of duty. All superfluous branches
We lop away, that bearing boughs may live.
Had he done so, himself had borne the crown
Which waste of idle hours hath quite thrown down.
Richard II., act iii, sc. 4.

This most interesting passage would almost tempt us to say that Shakespeare was a gardener by profession; certainly no other passages that have been brought to prove his real profession are more minute than this. It proves him to have had practical experience in the work, and I think we may safely say that he was no mere 'prentice hand in the use of the pruning knife.

The art of pruning in his day was probably exactly like our own, as far as regarded fruit trees and ordinary garden work, but in one important particular the pruner's art of that day was a far more laborious art than it is now. The topiary art must have been the triumph of pruning, and when gardens were full of castles, monsters, beasts, birds, fishes, and men, all cut out of Box and Yew, and kept so exact that they boasted of being the "living representations" and "counterfeit presentments" of these various objects, the hands and head of the pruner could seldom have been idle; the pruning knife and scissors must have been in constant demand from the first day of the year to the last. The pruner of that day was, in fact, a sculptor, who carved his images out of Box and Yew instead of marble, so that in an amusing article in the "Guardian" for 1713 (No. 173), said to have been written by Pope, is a list of such sculptured objects for sale, and we are told that the "eminent town gardener had arrived to such perfection that he cuts family pieces of men, women, and children. Any ladies that please may have their own effigies in Myrtle, or their husbands in Hornbeam. He is a Puritan wag, and never fails when he shows his garden to repeat that passage in the Psalms, 'thy wife shall be as the fruitful Vine, and thy children as Olive branches about thy table.'"

B.—Manuring, &c.

Constable. And you shall find his vanities forespent
Were but the outside of the Roman Brutus
Covering discretion with a coat of folly,
As gardeners do with ordure hide those roots
That shall first spring and be most delicate.
Henry V., act i., sc. 4.

The only point that needs notice under this head is that the word "manure" in Shakespeare's time was not limited to its present modern meaning. In his day "manured land generally meant cultured land in opposition to wild and barren land. So Falstaff uses the word—

Hereof comes it that Prince Harry is valiant, for the cold blood he did naturally inherit of his father, he hath, like lean, sterile, and bare land, manured, husbanded, and tilled with excellent endeavour of drinking good and good store of fertile sherris, that he is become very hot and valiant. *2nd Henry IV.*, act iv., sc. 3.

And in the same way Iago says—

Either to have it (a garden) sterile with idleness or manured with industry.
Othello, act i., sc. 3.

Milton and many other writers used the word in this its original sense; and Johnson explains it "to cultivate by manual labour," according to its literal derivation. In one passage Shakespeare uses the word somewhat in the modern sense—

Carlisle. The blood of English shall manure the ground.
Richard II., act iv., sc. 1.

But generally he and the writers of that and the next century expressed the operation more simply and plainly, as "covering with ordure," or as in the English Bible, "I shall dig about it and dung it."

C.—Grafting.

(1) *Buckingham.* Her royal stock graft with ignoble plants.
Richard III., act iii., sc. 7.

(2) *Dauphin.* O Dieu vivant! shall a few sprays of us,
The emptying of our fathers' luxury,
Our scions, put in wild and savage stock,
Spirt up so suddenly into the clouds,
And overlook their grafters?
Henry V., act iii., sc. 5.

(3) *King.* His plausive words
He scattered not in ears, but grafted them,
To grow there and to bear.
All's Well That Ends Well, act i., sc. 2.

(4) *Perdita.* The fairest flowers o' the season
Are our Carnations and streaked Gillyvors,
Which some call Nature's bastards: of that kind
Our rustic garden's barren; and I care not
To get slips of them.
Polixenes. Wherefore, gentle maiden,
Do you neglect them?
Perdita. For I have heard it said
There is an art which in their piedness shares
With great creating Nature.
Polixenes. Say there be;
Yet Nature is made better by no mean,
But Nature makes that mean: so, over that art
Which you say adds to Nature, is an art
That Nature makes. You see, sweet maid, we marry
A gentler scion to the wildest stock,
And make conceive a bark of baser kind
By bud of nobler race: this is an art
Which does mend Nature, change it rather, but
The art itself is Nature.
Perdita. So it is.
Polixenes. Then make your garden rich in Gillyvors,
And do not call them bastards.
Perdita. I'll not put
The dibble in the earth to set one slip of them.
Winter's Tale, act iv., sc. 4.

The various ways of propagating plants by grafts, cuttings, slips, and artificial impregnation (all mentioned in the above passages) as used in Shakespeare's day, seems to have been exactly like those of our own time, and so they need no further comment.

V.—Garden Enemies.

A.—Weeds.

(1) *Hamlet.* How weary, stale, flat, and unprofitable
Seems to me all the uses of this world!
Fye on it, oh fye! 'Tis an unweeded garden
That grows to seed; things rank and gross in Nature
Possess it merely.
Hamlet, act i., sc. 2.

(2) *Titus.* Such withered herbs as these
Are meet for plucking up.
Titus Andronicus, act iii., sc. 1.

(3) *York.* Grandam, one night, as we did sit at supper,
My Uncle Rivers talked how I did grow
More than my brother. "Ay," quoth my Uncle Glo'ster,
"Small herbs have grace, great weeds do grow apace;
And since, methinks, I would not grow so fast,
Because sweet flowers are slow, and weeds make haste.
Richard III., act ii., sc. 4.

(4) *Queen Margaret.*
Now 'tis the spring, and weeds are shallow-rooted;
Suffer them now, and they'll o'ergrow the garden,
And choke the herbs for want of husbandry.
2nd Henry VI., act iii., sc. 1.

(5) Unruly blasts wait on the tender spring,
Unwholesome weeds take root with precious flowers.
Rape of Lucrece.

(6) *King Henry.* Most subject is the fattest soil to weeds
2nd Henry IV., act iv., sc. 4.

The weeds of Shakespeare need no remark; they were the same as ours; and, in spite of our improved cultivation, our fields and gardens are probably as full of weeds as they were three centuries ago.

B.—Blights, Frosts, &c.

(1) *York.* Thus are my blossoms blasted in the bud,
And caterpillars eat my leaves away.
2nd Henry VI., act iii., sc. 1.

(2) *Montague.* He is to himself so sweet and close,
So far from sounding and discovery,
As is the bud bit with an envious worm,
Ere he can spread his sweet leaves to the air,
Or dedicate his beauty to the sun.
Romeo and Juliet, act i, sc. 1.

(3) *Imogene.* Comes in my father,
And like the tyrannous breathing of the north
Shakes all our buds from growing.
Cymbeline, act i., sc. iv.

(4) *Bardolph.* The instant action
Lives so in hope as in an early spring,
We see the appearing buds—which to prove fruit
Hope gives not so much warrant as despair
That frost will bite them.
2nd Henry IV., act i., sc. 3.

(5) *Violet.* She never told her love,
But let concealment, like a worm i' the bud,
Feed on her damask cheek.
Twelfth Night, act ii., sc. 4.

(6) *Proteus.* Yet writers say, as in the sweetest bud,
The eating canker dwells, so eating love
Inhabits in the finest wits of all.
Valentine. And writers say, as the most forward bud
Is eaten by the canker ere it blow,
Even so by love the young and tender wit
Is turn'd to folly, blasting in the bud,
Losing his verdure even in the prime
And all the fair effects of future hopes.
The Two Gentlemen of Verona, act i., sc. 1.

(7) *Capulet.* Death lies on her like an untimely frost
Upon the sweetest flower of the field.
Romeo and Juliet, act iv., sc. 5.

(8) *Lysimachus.* O sir, a courtesy
Which if we should deny, the most just gods
For every graff would send a caterpillar,
And so afflict our province.
Pericles, act v., sc. 1.

(9) *Wolsey.* This is the state of man: to-day he puts forth
The tender leaves of hope, to-morrow blossoms,
And bears his blushing honours thick upon him:
The third day comes a frost, a killing frost,
And when he thinks, good easy man, full surely
His greatness is a ripening, nips his root,
And then he falls, as I do.
Henry VIII., act iii., sc. 2.

(10) No men inveigh against the withered flower
But chide rough winter that the flower hath killed!
Not that devoured, but that which doth devour,
Is worthy blame.
Rape of Lucrece.

(11) For never-resting time leads summer on
To hideous winter, and confounds him there;
Sap checked with frost and lusty leaves quite gone,
Beauty o'ersnowed, and bareness everywhere;
Then, were not summer's distillation left,
A liquid prisoner pent in walls of glass,
Beauty's effect with beauty were bereft,
Nor it, nor no remembrance what it was;
But flowers distilled, though they with winter meet,
Lose but their show; their substance still lives sweet.
Sonnet v.

With this beautiful description of the winter-life of hardy perennial plants I may well close these papers on the "Plant-lore and Garden-craft of Shakespeare." They have stretched to a much greater extent than I at all anticipated when I commenced them, but this only shows how large and interesting a subject I undertook, for I can truly say that my difficulty has rather been in the necessity for condensing than enlarging my matter, which I soon found might be made to cover a much larger space than I have given to it.

As the papers have appeared from week to week, I have had to thank many readers of The Garden (mostly complete strangers to myself) for useful suggestions and inquiries; and before I quite finish them, and with the prospect of giving them at some future time a more permanent shape, I would invite any further suggestions or remarks, especially in the way of correction of any mistakes or omissions that I may have made, and should feel very thankful to any one that would kindly do me this favour.

And having often quoted my favourite authority in gardening matters, old "John Parkinson, Apothecary, of London," I will again make use of him to help me to say my last words—"Herein I have spent my time, pains, and charge, which, if well accepted, I shall think well employed. And thus I have finished this work, and have furnished it with whatsoever could bring delight to those that take pleasure in those things, which how well or ill done I must abide every one's censure; the judicious and courteous I only respect; and so Farewell." H. N. Ellacombe.

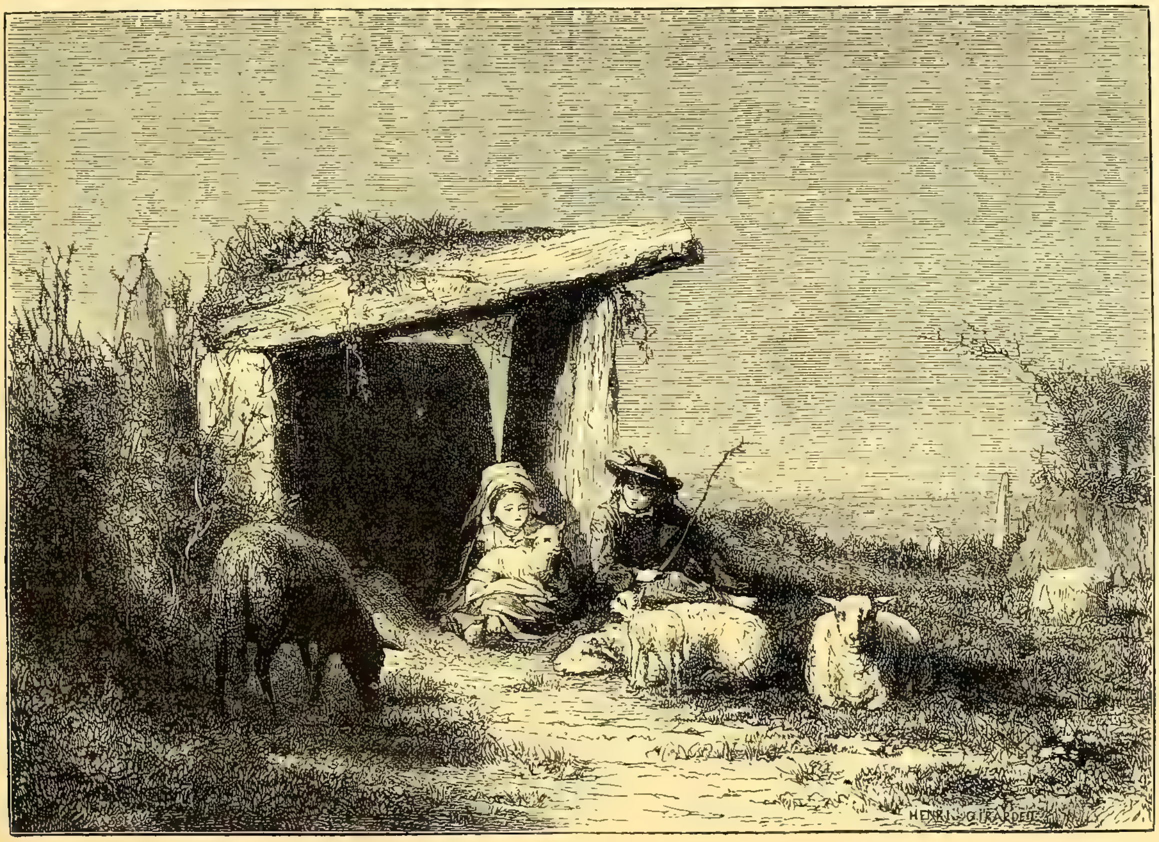
A FRUIT CELLAR.

Almost yearly we have some "newly-discovered" principle for the keeping of fruits. I read them all and I believe what I please. While remembering a fruit-room that I once knew, I will try to describe it, and at the same time record that I ate fruit from it in October that was gathered one year before, and just as fresh as that gathered that day from the same tree. A level piece of ground, from which water could be readily drained to a depth of 5 ft., was selected. A spot 13 ft. by 21 ft. was dug out 4 ft. deep, with perpendicular sides; then posts 7 ft. long of 4-by-4-in. stuff were placed at the corners, and two between the corners on each of the longest sides. The roof was one-third Pitch Pine, with ventilators in each gable, and a door 3 ft. wide at one end. Studs of 4-by-4-in. scantling were used in the spaces between the posts; 1-in. boards were nailed on what would be the outside of these studs before they were put in place. Before the roof was put on, these studs were boarded on the inside, and the spaces filled (packed) with sawdust. The ridge-pole and plates, 2 in. by 4 in., were then put on; the underside of the roof lined from ridge to plates with ½-in. boards; then sawdust was filled in, finishing by putting on a roof of 1-in. boards, broadly battened and projecting 1 ft. over the plates and ends. A floor of 1-in. boards was laid 7 ft. from the bottom, leaving a trap-door in the centre, hung on hinges, with a pulley-rope (to raise or lower it) in the main room. Double doors were built at one end; a passage was left 3 ft. by 18 ft., and on the sides and rear end shelves were made, commencing 3 ft. from the ground. A shelf was put every 6 in., of boards 4 in. wide, ½ in. thick, and leaving a space of ½ in. between each two boards of the shelf, and finishing by a 2-in. strip edgewise on the front of each shelf. The 3 ft. space under the shelves was left for storing baskets or barrels of fruit as brought in until they could be arranged. Before any fruit was placed upon the shelves, clean white paper was spread, the first tier laid, another paper over, then another tier, and another paper; no two fruits of any kind touched each other. I have said double doors were made. This means one door 3 ft. inside of the other, the inner door having glass in it to light the room when looking over or arranging the fruit in cold weather if necessary. The ventilators in the apex of each end were arranged to be opened or closed by a pulley cord from the outside. The earth taken from the cellar was banked up all around the house, walls being built to admit of steps down to the entrance. A thermometer was kept, and unless carelessness occurred in opening on a cold day, it was never below 34° nor above 50°. The cost can be easily calculated, and as such a house then kept fruits as they should be, I see no reason why such an one should not again do it.—"American Country Gentleman."

The Phylloxera and Sandy Soil.—In Illinois and Missouri, Vineyards located on sharp gravel or sandy soils are not affected by this pest; particularly upon the arenaceous sites along the Mississippi River. Whether, if they should come to overrun this country as they have done France, they may not also become naturalized in such soils remains to be seen. It would seem, however, that they avoid gritty soils. In California, where they are not yet much spread, they are found mostly on Vines in rich soil in low places. Gravelly hill land seems as yet entirely exempt.

SCENE IN BRITTANY.

Rough structures, either for shade, shelter, or rest, might be made very picturesque by a mingled mass of Ivy and Honeysuckle or wild Roses, and would not detract from the wildness of spots which it might be deemed desirable to keep as nearly as possible in a state of nature. Such is one of the ideas suggested by this pretty pastoral scene in Brittany, from a painting by Henry Girardet, which is also suggestive of the flowers of the heath and of the rocks, of Ferns and Ivy, and of Burnet Rose. These Druid stones also, enormously aged as they are and often beautifully garlanded with wild flowers and creepers, remind us that rock gardens, well formed of natural stone, would be the most enduring of all and the only ones that time could not destroy. H. N. H.



Scene in Brittany, after H. Girardet.

Eulalia japonica.—This appears likely to prove a valuable and interesting addition to the hardy, ornamental perennial Grasses at present in cultivation. It is allied to the genus Erianthus, and is even included in it by some botanists. It is of robust growth, attaining 6 ft. to 7 ft. in height, and established plants form clumps 16 ft. to 18 ft. in circumference. The flower panicles are at first brownish-violet, with erect branches, and produce at that stage but little effect, but as the flowers open, the branches of the panicle curve over gracefully, and bear a strong resemblance to what is known as a Prince of Wales' Feather. Each of the individual flowers, which are very numerous, has at its base a tuft of long, silky hairs, and these contribute greatly to the feathery lightness of the whole. It promises to be perfectly hardy. Two beautifully variegated forms of this plant are in cultivation, one with the foliage striped longitudinally with white (in the style of the common Ribbon Grass), the other with transverse markings, and it is probable that the variegated forms will reproduce themselves by means of seed.—William Thompson, *Ipswich.*

Gladiolus, The Bride.—This is a variety that should not be overlooked when procuring bulbs. As a border plant, and for cut flowers, it is unsurpassed; it lasts good for weeks in a cut state, and looks equally as well as many Orchids.—W. Osborne, *Fota.*

THE FRUIT GARDEN.

CHERRIES AND PLUMS IN KENT.

(Continued from p. 304).

Cherries.

Fuller says in his "Kentish Worthies" that "Cherries were fetched out of Flanders, and first planted in this country by King Henry VIII." Probably it was the excellent sort known as the Flemish Cherry that was "fetched out of Flanders," which is, as Mr. Darwin remarks, "a very odd-looking fruit, much flattened at the summit and base, with the latter deeply furrowed and borne on a stout, very short foot-stalk." Cherries were brought to Kent by the Romans, and though some authors say they were lost in the Saxon period, and restored in the reign of Henry VIII., this appears to be an error. Kent has certainly always been famous for Cherries, and nothing can be more beautiful than a Cherry orchard in full blossom, with the masses of white clusters covering the trees, which look from a distance as if wreathed with snow. Cherry trees invariably have a great wealth of blossoms, which are exposed to the proverbial changes and chances of the fickle spring season. They come into blossom in Kent about the same time as the Blackthorn—from the 6th to the 25th of April—and they require suitable weather at the time of fecundation; neither too dry nor too wet, nor too much sun. "A cold blow suits Cherry bloom," say the rustics, and this coincides with experience, and the physiology of the process of fecundation. "Moisture," writes a friend, "is absolutely necessary for the prolongation of the pollen tube. If the sun be too powerful, the stigma of the pistil is apt to become scorched, and the natural moisture being lost, the pollen tube is undeveloped; on the other hand, should the pollen grain be exposed to wet from rain just as it becomes ripe, and before it reaches the stigma, the pollen tube will be developed in a situation where it can never reach its natural destination in the embryo sac." To illustrate this: the Cherry trees were in full blossom about the 10th of April, in 1876, when the weather was very wet, with heavy rain and snow-showers: the crop of Cherries was very short indeed. In the previous year the blossoms were in full beauty about the 22nd of April; though the weather was cold, it was dry, and a very large crop of Cherries was grown. Cherries are grown upon Grass land, principally in the eastern part of the country between Chatham and Canterbury. There are a few orchards near Maidstone, but they are becoming few and far between. The trees are planted at first upon cultivated ground, having between them Hops, fruit bushes, or Plums, which are taken out after a few years, and Grass seeds sown. The Cherry trees are set at a distance of from 27 ft. to 33 ft. apart, which would give from 40 to 60 trees per acre. In some cases the landlord finds the standard trees, and the tenant pays for the labour and finds the bushes, which soon come into bearing. The rent of Cherry orchards is about £8 per acre upon an average. Good managers never mow Grass under Cherry trees, but feed it with fatting sheep, and manure it with from twenty to thirty loads of London manure per acre. Cherries are "worked" on the "Gaskin" or wild Cherry stock, which is found in abundance in the woods. This wood is harder than that of the "Honey Red," and not so liable to gum. Pruning is done tenderly and carefully for the first two or three years, after that very little is requisite. A large grower writes:—"I am very reluctant to prune Cherry trees after the first year or two."

The chief sorts cultivated are the Adams' Crown Heart, the earliest sort, allied to the White Heart, according to Dr. Hogg, but a better bearer; the Black Heart, a very old standard Cherry; the Elton Heart, Black Eagle, also an early sort; May Duke, Turkey Heart, Frogmore, Early Bigarreau, Waterloo, also early; the Early Purple Gem, Bigarreau, a large, firm-fleshed, somewhat late, and most salable Cherry; Morello, used for making Cherry brandy; Kentish and Flemish, both of which are admirable for cooking and bottling, having a fine sub-acid flavour, and a brilliant colour. Mr. Darwin remarks upon the first-named of these Cherries that "the stone adheres so firmly to the foot-stalk that it could be drawn out of the flesh; and this renders the fruit well fitted for drying." Nothing, it must be added, can be more grateful to convalescent patients than the flavour of dried "Kentish" Cherries. Mr. Webb, in his paper on "Fruit Cultivation," remarks—"It is odd that, although our great propagators have added of late years so many excellent and useful varieties to the stock of Apples, Pears, and Plums, yet with Cherries we have had but few additions." Picking is principally done by women, who mount the tall ladders with great agility, and get from 9d. to 1s. 3d. per sieve, containing each about 48 lbs. of fruit. A large proportion of the Cherries are sold upon the trees by public or private sale in June and July to fruit buyers, who take all risks and further expenses upon themselves. Mr. Webb gives a table of prices made at sales by auction of certain well-known orchards. For instance, he states that one large orchard of 88 acres averaged £19 9s. 6d. per acre for fourteen years; another, of 3 acres, has made £37 4s. per acre for thirteen years. From trustworthy information from another source as to seven typical orchards, it is shown that the fruit growing upon one of these realised by auction £27 14s. per acre in 1874, £24 per acre in 1875, and £41 2s. per acre in 1876; giving an average of £30 18s. 8d. per acre for the three years. In another case £43 per acre was obtained in 1874, £33 10s. in 1875, and £32 8s. in 1876; showing an average of £36 6s. per acre for three years. This, it must be remembered, is for the produce, clear of all expenses of picking, packing, carriage, and commission. The expenses up to the time of sale, for rent, tithe, ordinary and extraordinary—for all fruit-land pays an extraordinary tithe-charge, varying from 6s. to 8s. per acre, in addition to the usual charge—rates, manuring, maintenance, pruning, amount to from £12 to £14 per acre, from which must be deducted the value of the Grass under the trees. For the last twenty-six years the average price made in London for Cherries grown in Kent has been about 8s. per sieve. Deducting an average cost of 2s. 8d. per sieve from this price for all expenses after the fruit is grown, a balance of 5s. 4d. per sieve is shown. The highest prices made for Cherries during the period alluded to were in 1876, and the lowest in 1875. And it is curious to note that, in spite of foreign competition, the average price per annum obtained for Kentish Cherries during the last ten years is nearly 1s. per sieve higher than the average of the preceding decade. All Cherries, except the Flemish, Kentish, and Morello Cherries, which are used for tarts, preserves, and liqueurs, are bought by fruiterers and costermongers for retailing and hawking for eating purposes, as they do not make good jam.

Plums and Damsons.—These are grown more or less in all the fruit-growing districts of the county. Growers in East Kent prefer the forward Orleans, Magnum Bonum, Blue Diamond, Victoria, Dauphin, Mussel, Early Rivers, and Washington. Black Plums sell the best. The trees are planted between Cherry and Apple trees, or are set in plantations by themselves with bushes under them. Greengages grow especially well in the neighbourhood of Rainham, near Sittingbourne, the fruit being very large and of a particularly fine flavour and colour. A tradition exists that £100 per acre has been made in one year on a piece of land near Chatham planted with Greengages. Plums generally sell well. The average price of Plums in London is about £19 per ton. In 1876 they made from £28 to £32 per ton; in 1871, only from £12 to £14 per ton. There is a famous Damson, known as the "Crittenden" Damson, that has been planted to an enormous extent in Kent during the last twenty years. This is propagated by suckers, or "spawns," which come up all round the trees, and yield fruit after their kind without being grafted, like the "Pershore Plum," which is general in Worcestershire. After these suckers have been planted out for two years they begin to bear. This kind of Damson is amazingly prolific, and the fruit brings high prices for jam, bottling, Damson cheese, and, as some say, for manufacturing port wine. Plum-trees, like Cherry-trees, do not require much pruning, and are inclined to "gum" and decay if the knife be too freely used. It is merely necessary to cut back any over-vigorous growth that may get too much ahead, and to clear out wood that crowds up the inside of the trees. Plum trees do not do well in exposed situations, as their roots are so near the surface that they are likely to be blown down by wind.

SEPTEMBER AND EARLY OCTOBER PEARS.

The following, in continuation of our list of Pears (see p. 183), will be found amongst the best of their class, all of which are fit for use from about the middle of September to the end of October. White Doyenné (fig. 1) is amongst the handsomest of Pears, being perfect in shape; its skin is smooth, and, when fully ripe, bright yellow, suffused with red on the side next the sun; the flesh is white and of a vinous flavour; this Pear will keep in good condition for about a fortnight after being fully ripe; we have it both in espalier and bush form; for the latter mode of training it is well adapted, as the fruit being small, the wind does not prove so injurious to it as to fruit of larger growth. Louise Bonne of Jersey (fig. 2) is a Pear well known to most cultivators, but amateurs and cottagers do not grow it nearly so extensively as they should do. We know one cottager in Suffolk who pays the rent of his cottage two seasons out of three by the produce of a standard tree of this Pear in his garden; it is one of the surest of fruiters, and in quality all that can be desired, and in a good fruit room it will keep a month in usable condition. Beurré Nantais (fig. 3) is comparatively a little known Pear; it may be described as of real Pear-shape, large, and somewhat uneven in out-

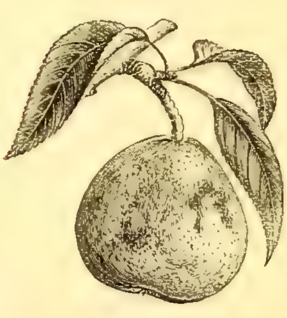


Fig. 1.—White Doyenné.

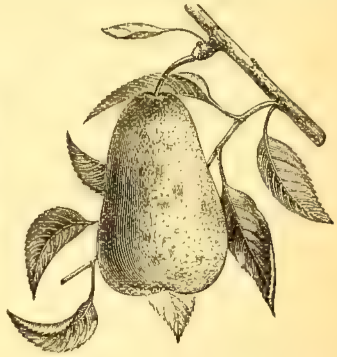


Fig. 2.—Louise Bonne of Jersey.

line, with a skin of greenish-russet; the flavour is neither rich nor unpleasant, something like a mixture of sugar and water; its greatest merit is the long time during which it continues in usable condition after being fully ripe. On the Quince stock it is very prolific. Flemish Beauty (fig. 4) in a hot, sunny season is the best Pear in cultivation, being large in size and excellent in shape, with a smooth, shining skin, which, when fully matured, is of a soft yellow colour, suffused with deep red on the side next the sun. The flesh is white and melting, and deliciously aromatic in flavour. It deserves culture on a wall of either southern or western aspect, in which case it should be gathered the moment there is the slightest indication of maturity, as if left to ripen on the trees it is soon over, and is not nearly so delicious. Brown Beurré (fig. 5) is one of the oldest, most generally grown, and in all respects one of the very best amongst the many kinds of Pears which we possess, being equally adapted for walls or standards, but well deserves a wall. Beurré de Amanlis (fig. 6) is also a well-known Pear, but not cultivated to the extent which it merits. It is amongst the largest of Pears. Its skin is greenish-russet, changing to yellow when quite ripe, and it has a flavour perfectly unique; this also deserves a wall. We have several trees of it trained obliquely as double cordons on a west wall, and they never fail to bear profusely. Bonne d'Ezée (fig. 7) is a large, handsome-looking Pear, of but third-rate quality; it is a good bearer on either the Quince or Pear Stock, and, for market growers, worthy of notice. Rousselet de Rheims (fig. 8) is a very small but delicious September Pear; it is soon over, but if gathered at varying intervals its season may be considerably prolonged. It is well adapted for growth in the form of bushes or standards. Other good kinds of September and early October Pears are St. Michel Archange, British Queen, Beurré Superfin, Autumn Bergamot, Beurré de Capiaumont, and Beurré Hardy.

W. W. H.

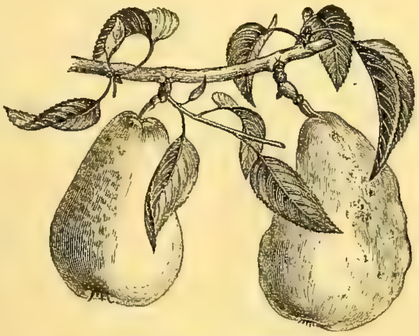


Fig. 3.—Beurré Nantais.

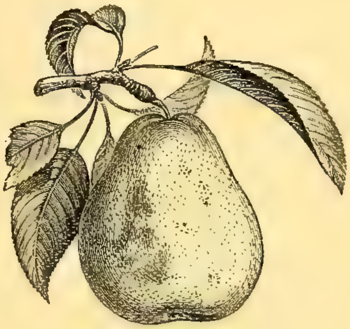


Fig. 4.—Flemish Beauty.

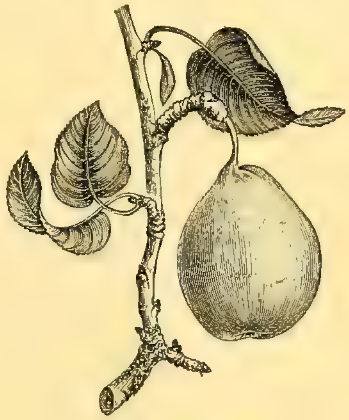


Fig. 5.—Brown Beurré.

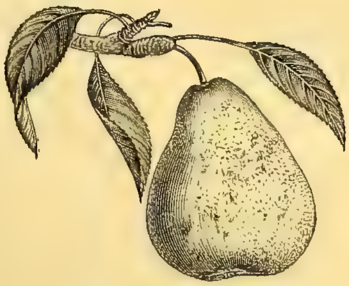


Fig. 6.—Beurré d'Amanlis.

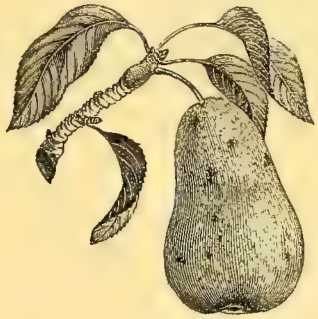


Fig. 7.—Bonne d'Ezée.

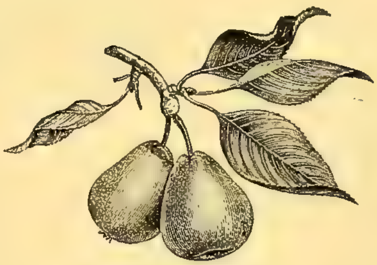


Fig. 8.—Rousselet de Rheims.

Autumn-fruiting Strawberry.—I have this season proved to my own satisfaction that Vicomtesse Héricarte de Thury and Garibaldi Strawberries are synonymous. We are now picking good fruit from plants of this variety that were transferred to the open ground after having been forced in the spring. It seems disposed to fruit as freely now as at the proper Strawberry season. Would it not be worth while to pick the flowers off an established plantation at the proper season, with the view of inducing a full crop of fruit at this time of the year?—W. W. H.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Vineries.—Grapes to keep well should before this be quite ripe. In the case of amateurs it will be frequently necessary to have some plants in the house that must of necessity receive water, but no more must be used than is absolutely required, and it ought to be given early in the morning so as to permit of any that percolates through the pots getting dried up during the day. From this time forward to the end of the year, where Grapes are hanging, the usual advice given is to light fires once or twice a week in order to warm the pipes or flues sufficiently to dry the atmosphere; but I have always found it much more effectual to keep a very little warmth on continuously, with a little air, top and bottom, also on continuously day and night. Those who have not tried it would be surprised how little heat is needed to keep up a circulation in the atmosphere, and to correct the effects of the damp external air that is admitted. As a further precaution, every bunch should be looked over once every week or ten days, as should even a single berry in the centre of a bunch become mouldy it will very quickly communicate decay to the whole.

Winter Cucumbers.—Plants raised from seeds put in a few weeks back should be moved into 6 in. or 7 in. pots as they require more room; they should by no means be allowed to remain too long in the small pots in which the seeds were sown, as from their natural quick growth the roots soon become pot-bound, after which it is difficult to get them to move freely. They ought to be kept close to the glass with a temperature never less than from 65° to 70° during night, and 5° to 10° more by day according to the weather. Where plants for winter work have to be raised from cuttings, the striking of these should not be longer delayed, otherwise it does not allow of their acquiring sufficient strength when planted out before the short sunless days retard their progress. Half the failures that occur in the case of Cucumbers that are expected to bear through January and February, the two most difficult months—are through the plants not getting sufficiently large and strong before the middle of December, and by their being allowed to bear fruit previous to that time; as when a regular supply of Cucumbers is required through the first months of the year, no matter how strong and vigorous the plants may be, no fruit should be allowed to set until near close upon the end of the year. Some soil should be got under cover in which to grow them, so as to allow of its getting dry and mellow before it is wanted. At this season, much more than in the spring or summer, it is essential that the soil be of a good description, containing plenty of turfy fibre, as if at all of a heavy nature the roots, which in the dull autumn weather are produced much more sparingly than earlier, will make little or no progress.

Frame Cauliflowers.—A frame proportionate in size to the quantity required should at once be got ready in which to plant Cauliflowers for turning out in spring; the soil ought to be of good quality, but not over rich, as if too much manure be used it induces soft, rank growth, a condition opposed to their wintering safely; if not of a moderately light character, it should be made so by the addition of leaf-mould, or other decomposed vegetable matter, sand, or charred refuse, any of which will answer the purpose; as these plants will have to be taken up and planted out in spring, where the soil is of a heavy description they cannot be moved without breaking the roots, which often results in the formation of small heads prematurely. If a little lime and soot be also dug in and dusted on the surface it will tend to keep off slugs; put the plants in 6 in. apart, give a gentle watering, and all but close the lights for a few days until they have begun to grow, when they should be exposed to the full air by keeping the lights off night and day until there is an appearance of hard frost; a little such as we get during this and the next month will not do them any harm. Cauliflowers wintered in this way do best when near the glass; consequently a shallow frame is the most suitable, as it obviates the necessity of filling up to a considerable extent with soil, which tends to rot the wood. Previous to being used for this and all similar purposes through the winter, frames should have the glass repaired if necessary, and be well painted, so as to exclude drip, as an excess of moisture previous to a severe frost intensifies its effects. Where hand-lights or cloches are used for wintering these plants, a suitable open site, away from trees or walls, ought to be chosen and prepared. Planting and after treatment should be the same as recommended for frames. In the southern or western parts of the kingdom, where Cauliflowers will generally live out under the protection of a south wall, with a little covering during hard frost or snow, a row should be put in from 6 in. to 9 in. away from the foot of the wall.

A Gardener's House and Garden (see p. 337).

Lettuce.—Crops of dwarf Cabbage Lettuce, such as Tom Thumb, now ready, or coming in for use, should be lifted and planted either in frames or in spaces where frames can be put over them, as we sometimes get a few frosty nights early in the autumn that affect the leaves so as to prevent their keeping well. A single or double row of late-sown Lettuces may with advantage be put in at the foot of a south wall; the check which the plants receive by moving thus late in the season induces a harder condition, that often enables them to survive a severe winter, when those that were earlier planted and in a more vigorous, free-growing condition, frequently succumb. A frame should be prepared in which to sow Cos Lettuce for planting out in spring. Choose an open, light situation, and raise the frames well at the back so as to obviate drip, as success with this crop depends upon the surface of the soil getting quite dry before winter, and remaining in that condition. Either a shallow frame must be used, or it must be filled up with soil to within 8 in. or 9 in. of the glass; make the soil quite smooth and sow broadcast, putting in enough seed so that the plants may stand 2½ in. or 3 in. apart, and if they come up closer they must ultimately be thinned. If the soil be wet a little old potting material, or anything of a similar nature that has been under cover and got quite dry, may with advantage be laid on the surface 1 in. or 2 in. in thickness previous to sowing; the soil from below will very soon communicate moisture enough to this to cause the seed to vegetate. Put on the light immediately the work is completed, so as not to allow the bed to get wet by rain; not so much as a single shower should reach it until the severe winter frosts are over; keep the light tilted back and front day and night, except during hard weather. From the care necessary to be bestowed on Lettuces treated in this way it will be seen that they are somewhat troublesome, but where a continuous supply is required during the spring it rarely can be had except these late frame-sown plants are brought successfully through the winter.

Endive.—Continue to tie up Endive for blanching as it is required, but no more should be done at a time than will keep up a supply, as when sufficiently blanched it soon afterwards begins to decay. Through the wetness of the season this crop in many places this autumn is difficult to blanch, especially the broad-leaved Batavian, the inner leaves of which are somewhat decayed through excessive moisture, and as soon as they are tied up they have a tendency to rot. The curled-leaved varieties have suffered, but not to such an extent as the other. If boards be used for blanching the curled-leaved kinds they will be much less likely either to rot through the effects of their previous condition or to suffer from frost, but whichever way they are treated the tying up or covering must be done when they are quite dry. Any ordinary thin boards sufficiently wide to cover the plants will answer the purpose, placing a couple or more bricks upon them, according to their length, to keep them close enough to the plants to exclude light and prevent their removal by wind.

Beet should now be taken up, as it is much more impatient of frost than most things; the roots will be all the better if laid in an open shed for a few days until the soil adhering to them has got quite dry, after which they may be stored under cover in moderately dry ashes out of the reach of frost.

Potatoes that were at all affected with disease before lifting should be frequently looked over, so as to remove such as are decayed, or the whole will quickly become affected.

Peaches and Nectarines.—In planting walls with these, it is a usual practice to at first put in the trees twice as thick as they are ultimately to remain when they have acquired their full size. Where trees that have been so managed exist, and a portion requires removal, this should be set about at once; those thus moved may with advantage be employed in filling up blanks on other parts of the wall. If taken up with care and immediately planted, they will directly begin to make new fibres, and if in a good healthy state will generally bear a moderate crop the ensuing summer; whereas, if the planting be deferred until later in the season, little fruit can be expected from them next year. Although, however, this early planting is advisable where the trees on being taken up can be at once re-planted without their roots being allowed to get dry, as can easily be done in shifting from one part of a garden to another, it must not be attempted when they have to be brought from such a distance as would involve the necessity of their being out of the ground some days, until later in the year when the leaves are off, or the bark will shrivel, which will injure them. Where Apples, Pears, Plums, Cherries, Gooseberries, or Currants have to be moved from one part of a garden to another, either on walls or in open quarters, this early transplanting is a great advantage. Where fruit trees have to be planted—the removal of which, for the above reason, has to be deferred till later in the season—I should recommend the ground to be prepared at once by digging or trenching, bringing in any new soil or manure that is needed; not only can the work be much more efficiently done before the ground gets thoroughly soaked by the autumn rains, but it will admit of the trees being planted as soon as ever they are fit to move. Where the soil is of a retentive character, it is still more necessary to prepare for, and carry out, the planting of fruit trees early in the autumn, for in some of our best Apple, Pear, and Plum-growing districts, the soil is of such a nature that unless the planting takes place in the autumn, it often happens that the land is so wet and adhesive through the winter that the work cannot be done until so late that the buds are moving, in which case a complete season's growth is lost, and the trees are often seriously injured.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

October 8.—Sowing Canadian Wonder French Beans in pots for forcing, using good fibry loam and leaf-mould and rotted manure; also Mustard and Cress in heat. Potting herbaceous Calceolarias; also a small batch of late Cinerarias. Getting pits and frames ready for Endive and Lettuce. Renovating linings round pits and frames in which Cucumbers, Radishes, French Beans, &c., are grown. Lifting Beetroot and storing it away in dry mould in an open shed. Looking over all Cauliflowers, and doubling down leaves, where heads are formed, to preserve them from frost, and removing all those fit for use to a cool shed, heeling them in in dry soil. Covering up Endive and Lettuce to blanch with inverted flower-pots. Gathering Easter Beurré, Josephine de Malines, and Winter Nelis Pears, and laying them singly on clean straw in fruit room. Watering the Pines all through, and tying up the fruit where required.

Oct. 9.—Potting Pelargoniums from flower borders; also a batch of Hyacinths, plunging the latter 2 in. or 3 in. deep in coal ashes in cold pits. Clearing off Cauliflower stumps and Peas which are done with, and preparing the ground for manuring and trenching. Transplanting a large border of Carter's Early Heartwell Marrow Cabbage. Turning a large heap of Mushroom manure. Moving Plum trees from nursery wall to other parts of garden where required to fill up vacancies. Planting Lettuce and Endive in pits and frames previously prepared by being filled with good soil.

Oct. 10.—Potting Lobelias and Tom Thumb and Flower of Spring Pelargoniums. Getting Chrysanthemums under cover. Weeding and thinning out autumn-sown Carrots. Hoeing amongst all the autumn-planted Cabbages. Gathering Blenheim Orange, Gooseberry Pippin, and Royal Somerset Apples.

Oct. 11.—Sowing Mustard and Cress in shallow boxes placed in heat for succession. Potting Centaureas and Carnations. Looking over Pelargonium cuttings, and removing all dead leaves and weeds. Earthing up late Celery when the soil is dry and in workable condition. Lifting Peach and Nectarine trees, and root-pruning them where required to check rank growth and bring them into a bearing condition. Clearing out all water-spouts and drains before the rainy season sets in. Gathering Beurré de Capiaumont, Beurré Clairgeau, and Duchess de Angoulême Pears. Clearing up leaves, and stacking them away for fermenting.

Oct. 12.—Potting Pelargonium cuttings which have been struck in a frame. Planting a border of spring-flowering plants, consisting of Wallflowers, Silene pendula compacta, Forget-me-Nots, Red and White Daisies, &c. Gathering all Scarlet Runners which are of usable size, and putting their stalks in water to keep them fresh until required for use. Earthing up Cardoons when the soil is dry and friable. Erecting staging over Strawberries in pots, on which to place spare lights to throw off heavy rains and protect the plants from frost. Clearing flower borders, and digging them. Top-dressing Cucumbers with chopped turf and rotted manure.

Oct. 13.—Roping Onions during wet weather; also looking over seed Potatoes, and placing them on their ends in shallow boxes to sprout. Cleaning paint in Vineries, &c., to destroy insects. Cutting shreds, pointing nails, making labels, pegs, &c., ready for use in dry weather. Fruit in use for dessert—Pines, Grapes, Pears, Plums, Apples, Nuts, &c.

A GARDENER'S HOUSE AND GARDEN.

Anyone who has spent wearied hours in the extensive solitudes of geometry at Versailles, and who was happy enough afterwards to cool his eyes among the rare and handsome trees, choice variety, and cool green of what is called the "Fleuriste," will probably preserve an agreeable souvenir of the spot. It is a little garden cut off from the rest of the grounds, and, like all charming gardens, remarkable by not being "laid out," in the usual sense of the word. Grass, trees, choice plants, a house and creepers, walls and creepers form the elements; but the resulting charm is quite indescribable. It is only a gardener's garden; but if kings were born to wisdom they would prefer it to the stony solitudes spread around their homes by thoughtless "landscape architects."

THE LIBRARY.

BELLOWS' DICTIONARY.*

This book, though not specially within our province, is, nevertheless, so novel in its way and so well done that we make no excuse for calling attention to it. The author has, with singular success, compressed into a very small, very neat, and handy little book all that is essential in a French-English and English-French dictionary. This possesses in addition several features not before found in any book:—1. The distinguishing of masculine and feminine genders by different types, or of the feminine by italic type. 2. The indication by typographic marks or signs, in French words, of the *liaison* or of its absence. 3. The arrangement of both the French-English and English-French divisions concurrently on the same page. 4. The manner of arranging the verb conjugations, and the reference by number to such conjungations from the text of the dictionary. 5. The figures showing equivalent measures or weights and their money values. 6. The indication on the maps, with the names of towns, of their distances from London and Paris, both in time and in miles, or in kilometres. 7. The translation of all words and phrases given in the following pages, which have previously appeared in no other dictionary. By the above plan well carried out there has been much saving of time, type, space, and much benefit to the reader, who is also enabled by the agreeable variety of type to find the word he seeks more quickly than when it is in a mass of uniform type. Words that are the same in both languages are explained only in French, and by this means space is also gained. The most striking feature of the little book, however, is the placing of the French part and the English part on the same page. On the upper part or half of the page there is the French dictionary with English explanations, on the lower the English with French explanations, thus saving much time in reference. The relations of weights, measures, money, and distance are exactly explained, and—what is rare in works of this kind—very clear and simple. The principles of French grammar illustrated in the commencement are carefully and systematically done. It were to be desired, perhaps, that less space were given to the verbs and more to nouns irregular in gender and number, also to the general rules which govern the foundation and accord of compound names, like *chef d'œuvre, arc-en-ciel*—words of which the usage is so frequent in French. The little plans at the end of the book are, strange to say, not only the smallest but also the clearest. That of London is most remarkable in this respect. If we may venture, where there is so much to praise, to say a word of criticism, it would be that a good many Gallicisms very seldom used might be omitted and the type somewhat enlarged, as a jolting traveller, least of any persons, likes very small type, and nobody would begrudge twice the space this little book takes up in his bag for one with larger type. The plan of the book is so good that a larger edition still—an octavo edition—in clear, large type would be a precious gain to the library. As it is, we have to thank Mr. Bellows for what is already done, and his work might well bear for motto a line from a great French writer—*C'est ici lecteur, un livre de bonne foi.*

Early Planting of Fruit Trees.—When the trees to be removed are close at hand so that the roots need not be long exposed to the air, I consider October to be the most favourable month of the year for transplanting fruit trees, as the soil being warm, fresh roots are at once emitted, and the trees start into growth in spring without a check; but where they have to undergo a long journey by rail, it is better to wait until the leaves are off. Last season we removed several Plums, &c., that had been temporarily planted on vacant spaces, and the growth which they have made this year is unusually satisfactory. In preparing sites for stone fruits I would warn the inexperienced against an error commonly committed, viz., filling the trench half full of manure, with the view of giving the trees a good start; the result of this is gross, watery shoots, which, necessitating so much knife-work, eventually bring on canker and other evils, from which trees planted in sound loam generally escape.—J. Groom, *Henham.*

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* "Dictionary for the Pocket": French and English, English and French. Both divisions on same page. By John Bellows. Second Edition. Gloucester: John Bellows.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY, October 2.

This was by far the best meeting which has been held here for a long time, flowers, fruits, and vegetables being shown in considerable numbers. Amongst the more attractive features of the show may be mentioned a large group of Nepenthes, Sarracenias, and other plants of that kind from Messrs. Veitch & Sons; a bank of Roses from Mr. Wm. Paul; Dahlias from Mr. Charles Turner; and a good collection of Grapes from Messrs. Lane & Son, Great Berkhamsted.

First-class Certificates were awarded as follows :—

Nepenthes hybrida maculata elongata (Veitch & Sons).—A garden hybrid, the result of a cross between N. sp. and N. Dominii. It has long strap-like leaves, to which are suspended well-shaped, deep green, and bright brown or purple-spotted elongated pitchers some 9 in. in length.

Nepenthes Courtii (Veitch & Sons).—A hybrid raised by crossing N. sp. "Borneo" and N. Dominii, the result being a dwarf-growing plant, with well-formed pitchers of a deep green colour, and quite distinct in shape from those of any other kind.

Nepenthes rubra maculata (Veitch).—The result of a cross between N. sp. and N. hybrida. A compact-growing kind, with narrowish leaves, and small, well-formed, purple spotted pitchers.

Gladiolus Rhamnes (Kelway & Son).—A kind with very large flowers of a brilliant scarlet, the throat and lower petals being blotched with rich purple.

Tree Carnation Osman Pasha (Turner).—A crimson-flowered, free-blooming kind, well adapted to pot culture.

Dahlia James Willing (Messrs. Rawlings).—A large, globular flower, with smooth, rich purple and maroon petals.

Dahlia Mrs. Shirley Hibberd (Rawlings).—A cream-coloured kind, with delicate, purple-tipped petals.

Primula White Lady (Gilbert).—A free-growing kind, having large, semi-double, white flowers, slightly tinged with violet.

Primula Mrs. Barron (Gilbert).—A kind with semi-double flowers, of large size, white, suffused with delicate purple.

Primula Princess (Gilbert).—A semi-double, white flower, striped and spotted with crimson.

Stone Apple (Killick).—A very large, clear-skinned fruit, with a small crown; colour greenish-yellow, with scarlet on the sunny side.

Miscellaneous Subjects.—Mr. H. Cannell, Swanley, sent a plant in a pot of a French Marigold, named Cannell's Perfection, a kind well furnished with orange and crimson-coloured blossoms; and from the same exhibitor also came plants of Lobelia Defiance, a dwarf-growing, compact kind, bearing a profusion of purple blossoms. Mr. G. F. Wilson sent cut sprays of Escallonia pterocladon, a kind which bears spikes of ivory-white, sweet-scented blossoms. Messrs. Kelway & Son, Langport, sent some good cut spikes of seedling Gladioli. From Messrs. Bell & Sons, Norwich, came a group of seedling Begonias grown in pots, amongst which were several which differed from any we had before seen. Mr. J. Farquharson, Acton Nursery, Wrexham, showed Viola flowers of large size, good form, and beautiful colours. Mr. C. Turner, Slough, furnished an epergne tastefully filled with Pompone Dahlias and Ferns, showing how effective and useful small-flowered Dahlias are for purposes of decoration. The same exhibitor also showed a collection of these Liliputian Dahlias, which were highly commended by the Floral Committee. It comprised nearly every known kind worthy of cultivation, and amongst them were some unique both in form and colour. Mr. Turner also contributed a collection of Tree Carnations in pots, consisting of self-coloured and striped kinds, amongst which Gloire de Lyon is a good kind, with bright crimson flowers; La Belle is also an excellent white kind, and Mazeppa is one of the best striped varieties, and a beautiful pink-flowered kind named King of the Belgians attracted considerable attention. Among Mr. Paul's Roses we noted good blooms of Louis Van Houtte, Madame Berard, Charles Lefebvre, La France, and other well-known kinds. Mr. Wheeler, Warminster, sent good blooms of show Dahlias, as did also Mr. Turner, Slough. Mr. Noble, Bagshot, showed cut blooms of Rose Queen of Bedders in good condition. Mr. Gilbert exhibited a collection of new Primulas of the semi-double type, all of which were much admired. Mr. Roberts, gardener to Baron Rothschild, Gunnersbury, furnished a flowering specimen of Odontoglossum crispum Rothschildi, the flowers of which are large and richly suffused with violet. Messrs. Frœbel & Co., Zurich, sent a Begonia named Monte Rosa, which promises to be one of the best of its class; it is compact in habit, and the flowers, which are remarkably large, are stiff and waxy, and of a rich salmon colour, set off in the centre by a cluster of rich golden stamens. Messrs. Stewart & Sons, Dundee, showed a plant of the Purple Norway Maple, a desirable kind, which has leaves of a deep bronzy-purple, a colour which contrasts well with green-leaved trees.

Fruit and Vegetables.—Mr. William Paul contributed an excellent collection of Apples, consisting of about ninety kinds, all of which are well worth culture. Mr. Harrison Weir sent excellent examples of Venn's Black Muscat Grapes, grown without fire heat; they were good in bunch and berry, and well coloured. Messrs. Carter & Co., High Holborn, showed a collection of Capsicums, amongst which some fruits of the kind named Giant Emperor measured from 6 in. to 7 in. long, and from 9 in. to 10 in. in circumference. Messrs. Kelway & Sons furnished a collection of Cucumbers grown without artificial heat, and which were, considering the season of the year, of a very meritorious character. Mr. Parr, gardener to J. Sims, Esq., Harrow Weald Park, sent a brace of Parr's Prolific Cucumbers, the result of a cross between Blue Gown and Telegraph; they were of good shape, and evidently excellent in flavour. Mr. Allen, Gunton Park, sent a seedling Onion, the result of a cross between White Spanish and Brown Portugal; it is globular in form, firm, and said to be very prolific. Mr. Turner showed a seedling Potato named Schoolmaster; a kidney-shaped kind, smooth in the skin, and apparently good in quality. Mr. J. Loney, gardener to G. Dickson, Esq., Gothenburg, Sweden, sent a large collection of Apples and Pears, which, on account of their richness of colour, size, and general good quality, were much admired; they had evidently been grown under glass. Filberts, consisting of some forty varieties, came from the Society's garden at Chiswick. Mr. Gilbert sent bunches of Gros Colman Grapes, which were considered so good as to deserve a bronze medal, which was recommended. Mr. Gilbert also sent a basket of Burghley Selected Brussels Sprouts of a superior description. Messrs. Lane's collection of Grapes, to which allusion has already been made, consisted of excellent bunches of Muscat Hamburgh, Black Hamburgh, Gros Colman, Trebbiano, and Muscat of Alexandra, Mrs. Pince's Black Muscat, and the best examples of Pearson's Golden Queen we have seen. From Mr. Bates came Gros Colman Grapes. Messrs. Harrison, Leicester, sent a seedling Apple named Lord Howe: and Mr. Allen, Gunton Park, sent a good-looking, long-keeping Apple, named Swanley Pippin. Messrs. Carter & Co. sent a Melon named Cream Pine, a kind oblong in shape, ribbed, and scarlet-fleshed. Mr. Allen had a good scarlet-fleshed Melon named Royal Ascot. Mr. Bennett, Rabley, showed Garibaldi Strawberry in excellent condition; the same exhibitor also sent four fruits of a variety of Melon, in fine condition, named Rabley, a scarlet-fleshed kind, of medium size, and beautifully netted. Mr. Jones, Bently Priory, sent a well-shaped fruit of Charlotte Rothschild Pine, about 8 lb. in weight, cut from a plant not eleven months old. Mr. Jones, Royal Gardens, Frogmore, had three smooth-leaved Cayenne Pines, each weighing from 9 lb. to 10 lb. From Mr. Turner, Slough, came a collection of Potatoes, amongst which we noted good examples of Snowflake, Model, Early Bird, Porter's Excelsior, Schoolmaster, and other popular sorts. Mr. Shirley Hibberd, Stoke Newington, sent examples of Watercresses, to show how the same variety varies in different localities and under different circumstances. A box of Goliath Tomatoes, a large-fruited kind, of good quality, was shown by Mr. Hepper, The Elms, Acton. Mr. Miles, gardener to Lord Carington, Wycombe Abbey, exhibited ripe and well-coloured Hamburgh Grapes from the same Vines from which ripe fruit was cut and exhibited in January of the present year.

INTERNATIONAL POTATO EXHIBITION.

This was held in the Westminster Aquarium on the 3rd, 4th, and 5th inst., and was in all respects a success. The different exhibits showed an improvement as regards quality on those produced on previous occasions. As respects numbers perhaps little advance has been made, but exhibitors have learnt better what class of tubers is considered best by the judges, and have shown accordingly. In the premier class (open) for twenty-four varieties, nine tubers of each, there were fourteen competitors, all of whom exhibited tubers of fair average quality, although in some cases rough, uneven specimens were observable. The best collection came from Mr. Peter McKinlay, Beckenham, who had excellent examples of some of the most popular varieties, including Bread-fruit, Porter's Excelsior, the Purple Grampion, Alexandra Kidney, and the best specimens of Model we have yet seen, together with other good English-raised varieties, which throughout the show took the preference to American sorts. The next collection, which was little inferior to the one just named, came from Mr. William Finlay, gardener to Colonel North, Banbury. In this there were more American kinds than in the preceding; the best-shaped tubers in this collection consisted of Snowflake, King of Potatoes, Myatt's Prolific, Schoolmaster, Perfection Kidney (white and clean), the purple Blanchard, and Princess of Lorne, all in excellent condition. In other collections the most noticeable kinds were Myatt's Perfection, Early Market, Henderson's Prolific, and Yorkshire Hero. In the amateurs' class for eighteen varieties there were nineteen competitors; the best collection came from Mr. William Porter, Old Meldrum, N.B., who had excellent medium-sized, well-shaped tubers, with clear skins, and showing no signs of disease. Among these the most conspicuous were Snowflake, International Kidney, Napoleon, Fenn's Bountiful, and Ash-top Fluke. In the next collection, from Mr. Donaldson, Inverurie, Aberdeenshire, were good examples of the Scotch Blue Dalmahoys, Early Handsworth, Turner's Union, and Yorkshire Hero—old but excellent kinds. In the amateur class for twelve varieties, nine tubers of each, there were seventeen competitors. The best collection came from Mr. James Pink, gardener to Lord Sondes, Faversham, who had evenly-sized, thin-skinned tubers, the best of which were Coldstream, Waterloo Kidney, Berkshire Kidney, and Bresee's Prolific. The next collection in point of merit came from Mr. Rose, gardener to E. Eyre, Esq., Newbury, who had good samples of Walnut-leaf Kidney, the salmon-coloured Garibaldi, Yorkshire Hero, Waterloo Kidney, and other popular kinds. In other collections were good tubers of Breadfruit, Prince Teck, Lye's Favourite, Carter's Main Crop, Schoolmaster, and Fenn's Bountiful. In the class of nine varieties there were nineteen competitors, the most successful amongst whom was Mr. Richard Dean, Ealing, who showed remarkably fine tubers of very distinct kinds; amongst them were King of Potatoes, Purple Ashleaf, Climax, and Salmon and International Kidneys. A second prize was awarded to Mr. Peter McKinlay for good examples of Ruby, Model, Snowflake, and Alexandra Kidney. The class for six varieties was even more interesting than the larger ones, the exhibits in every case being of a superior character. The best came from Mr. W. Finlay, who had finely-shaped, clear-skinned tubers of Blanchard, Magnum Bonum, Walnut Kidney, Edgcott Seedling, Snowflake, and Scotch Blue. The next best collection came from Mr. Ellington, Milden Hall. It contained good specimens of Breadfruit, Giant King, Snowflake, Red-skinned Flourball, and King of Potatoes. In the class of four varieties (two Kidneys and two Rounds), there were twenty-three exhibitors, all of whom showed excellent tubers. The best came from Mr. F. Miller, gardener to J. Friend, Esq., Margate, and consisted of large but shapely specimens of Ashtop Fluke, Snowflake, Blanchard, and Breadfruit. Mr. S. Denyer, Beckenham, who was second, had good dishes of Model, Golden Eagle, Salmon Kidney, and International Kidney. In the class of four sorts of Potatoes not yet in commerce, or in commerce for the first time this year, there were twelve exhibitors. The best came from Mr. J. Pink, who showed Covent Garden Perfection, a kidney-shaped variety of medium size, very even surface, and, judging by appearances, of excellent quality; Superior, a red-skinned kind; and two others of a less meritorious description. Mr. Richard Dean had Bedfont Prolific, Fenn's International Kidney, Radstock Beauty, and Garibaldi Kidney, all apparently good kinds. In competition for two dishes of Potatoes, there were twelve exhibitors. The best tubers came from Mr. R. Dean, who had Schoolmaster and International Kidney in excellent condition; Mr. Miller had Schoolmaster and Jackson's Improved. The prize for the best dish of any round white-skinned Potato was awarded to Mr. Robert Ironside, Inverurie, N.B., for a dish of Rector of Woodstock, remarkably even, clean, and bright, with scarcely any eyes observable. Mr. Pink gained the second award for Rounds with even examples of Early Goodrich. The best dish of round coloured-skinned kinds came from Mr. Pink, who had Red Emperor in good condition; Mr. Dean had good examples of Radstock Beauty. The best single dish of White Kidneys came from Mr. F. Miller, who had good tubers of Yorkshire Hero, and Mr. Finlay had good examples of Lapstone Kidney. The best dish of coloured Kidneys came from Mr. Evendon, Dartford, who had very large tubers of Superior; Early Vermont, from Messrs. Virgo & Sons, was next in point of merit. The best dishes of Snowflake came from Mr. Pink, and the best Ruby came from Mr. C. Ross. The best examples of Porter's Excelsior came from Mr. Pink and Mr. Ross. The best dishes of Schoolmaster (Turner) were shown by Mr. J. B. Hall, Gillingham, and Mr. E. Bennett, Enville.

Amongst miscellaneous exhibits was a basketful of very fine Schoolmaster Potatoes, from Mr. Charles Turner; and Messrs. Bliss & Sons, of New York, showed an extensive collection of Potatoes, the best amongst which were Manhattan, Startler, Centennial, and Trophy. Messrs. Kelway & Sons sent a collection of Cucumbers, consisting of new and approved kinds, said to have been grown in a cool house; the same firm also sent stands of seedling Gladioli, which were much admired. Messrs. Sutton & Sons furnished a large quantity of their Magnum Bonum Potato in good condition; and Mr. Porter, Old Meldrum, sent an extensive and superior mixed collection of Potatoes. Messrs. Carter & Co. had a large stand filled with Potatoes, Asters, Capsicums, and other vegetables of a highly meritorious description. Messrs. Daniels Bros., Norwich, had a collection of 500 varieties of Potatoes, arranged on a separate table, and associated with cut spikes of Gladioli and Dahlias. Mr. Turner had a good collection of cut blooms of Pompone Dahlias.

Alexander Peach.—"The Alexander is evidently a desirable Peach, and its high flavour and juicy quality make it a summer fruit as much as the Strawberry, the Cherry, or the Plum. We like this variety on that account, and commend it to the attention of Peach-growers for the supply of the summer market, in good locations." I see the above in an American paper. Is this kind to be had in this country?—A. H.

Autumnal Crocuses in Turf of Spreading Plants.—I have a large stock of these, the well-earned reward of a system of cultivation that answers with many more things besides the lovely Colchicums. The secret of it is they have been left alone. I devoted a border to them, had it deeply dug and well-manured and planted with turfy plants, such as the Woodruff, carpet-like Saxifrage, Arabis, Arenaria, and other plants of the like habit in considerable variety. Having begun in the spring with these, I planted at regular intervals amongst them in the autumn tufts of Colchicums in flower, securing all the varieties known to the nursery trade, and buying freely to begin with. The experiment has succeeded to perfection, and already the flowers of my autumnal Crocuses are appearing in plenty. My reason for proceeding in this way was to protect my pets from the spade, which would be sure to find them at some unhappy moment and bring them to a dreadful end. All kinds of bulbous plants that for a certain time are unseen may be grown well in this way if you begin well with them. It is not advisable, as a rule, to plant them in an old hard border, but to make a good border, and, having arranged the places for the bulbs, then proceed to finish by covering the ground with beautiful surfacing plants, and you thereby prohibit the entry of the spade and have a lovely garden every day in all the year.—"Gardeners' Magazine." [This is one of the various forms of true carpet planting, and its results are very different from the lifeless and highly coloured "patterns" to which the term is generally applied.]

COLCHICUMS BEARING SEED WITHOUT PREVIOUS VISIBLE FLOWERS.

Mr. Horsman, in The Garden of June 30, says Colchicum bulbs received early in autumn from the Caucasus were immediately planted but did not flower; yet in the following spring the foliage appeared, and with it seed capsules containing perfect seeds. I think I can explain this without supposing "abortive and inconspicuous flowers." Doubtless the bulbs had flowered before they were sent from the Caucasus. Supposing them to have been found in a wild state, and taken up, of course, the collector would only find them by their flowers. Of these there would be no visible trace when received in England, but in due course the hidden ovary, duly fertilised, would make its appearance. I do not know the Colchicums, but we have here (in South Africa) the Gethyllis, which flowers precisely like the pretty coloured plate in The Garden (see p. 548, Vol. XI.), only on a smaller scale, and the flowers are pure white with a pink or purple tinge on the outer edges of the sepals. After the bulbs have had a good roasting during our early summer months, the first good shower at Christmas or the New Year is followed on the third day by a host of these pretty, sweet-scented flowers, and as regularly as the time comes round I go out on the third morning after rain with a basket, knowing that within a few hundred yards of my house, on an open hillside, in the centre of the town, I shall find enough to perfume my house for a couple of days. About twenty years ago I took up a quantity of the bulbs in flower but leafless, and putting them away on a shelf, forgot all about them. Some months afterwards I overhauled them, and found that most of them had got shrivelled up, all the moisture of the bulb having gone to form perfect fruits; and so for the first time I learned the fact that the sweet white flower and the fruit—which children gather in May or June, and familiarly known by the native name of "kookamakanka"—were the production of the same bulb. I have no doubt Mr. Horsman's Colchicum seeds were produced in the same way. W. C. Elliott.

Port Elizabeth, S. Africa.

Water Chestnut (Trapa natans).—A few weeks ago there appeared in The Garden (see p. 193) a short account of this interesting plant, which is an annual that grows in great abundance principally in the south of Europe, but as far north as Versailles; and from the climate and conditions under which it is found growing wild, I believe that it might be naturalised in this country, where it would prove not only an ornament to our swamps and streams, but even of value as an article of food. The fruit, which is of good size, is encased in a peculiar hard shell, which, when cut, discloses a white, sweet kernel, about the size of a Filbert, and in flavour resembling that of the Spanish Chestnut. It is extensively eaten in the south of Europe both raw and cooked, and Pliny tells us that the Thracians made the nuts into bread; possibly some correspondent of The Garden could give a receipt for cooking it, as much depends upon that; boiling in salt water I am told is best. I believe that the plant, if once established in this country, would prove a great boon as an article of food.—A. P.

Quilled Asters.—The appellation of "German" so commonly applied to these Asters, doubtless leads to the belief that seeds of them are only obtainable from the Continent; but that is a mistake, as the finest strains are now produced from home, grown seed; Betteridge's suberb flowers, now so familiar at flower shows, are probably the best of their kind anywhere to be found, and the seed which produces them is annually saved at Chipping Norton. The beauty of this form of the annual Aster is indisputable, as although somewhat formal in shape yet they are not too large to be ungainly whilst the smaller side flowers are singularly beautiful for bouquets or for table decoration. Quilled Asters are erect in habit, and need little support, and they may be grown in any good border soil, but the blooms come better and larger if specially cultivated.—A. D.

Air Roots on Vines.—These are not an indication of ill-health, but the contrary. In early forcing, for instance, where one is obliged to keep up a large amount of heat and atmospheric moisture with little ventilation, air roots are almost sure to make their appearance, although I am acquainted with places in which good crops of early Grapes are grown without air roots showing themselves. Where very early forcing is carried on, it is not a good practice to allow the evaporating pans to be always full of water, as the continual steaming loads the atmosphere with moisture, and the sashes cannot be safely opened to let it out. Hence the production of air roots. It is better to damp the floors or walls occasionally than have the house in a continual steam, producing air roots, and often causing the Grapes, when coming into bloom, to damp off. I am acquainted with Vines at this moment that bristle with air roots, and yet, as regards health and vigour, no Vines could be more satisfactory. As a proof that a close, warm atmosphere produces air roots, I may mention that a plant of Hoya carnosa under my care, trained against a wall in a stove, is over run with air roots, which cling to the wall like those of Ivy, whilst another plant of the same, trained to the wall of an ordinary greenhouse, has not a vestige of an air root upon it; yet, as regards health and profusion of bloom, both are equally good. When I see air roots produced in any great quantity during early forcing, I reduce the amount of moisture and admit more air, if possible, and I find that where this is done fewer roots are emitted. Air roots, therefore, would seem to be the result of a warm, close, damp atmosphere, and the want of admission of a proper amount of air.—J. B., *West Lodge, Chapeltown, Leeds.*

NOTES ON LATE PEAS.

The last week or two of sunshine seems to have put new life into late Peas, and shows how necessary warmth and light are to their proper development. The following notes were taken to-day (Sept. 29):—Ne Plus Ultra, sown June 11, is now in excellent condition and loaded with beautiful green pods, some fit to gather, others, influenced no doubt by the fine weather, fast filling; and all the ends of the shoots are covered with blossoms. June 11 is quite late enough for sowing this variety in the Midland Counties. British Queen, sown May 31, is still full of growth, and producing plenty of pods; but it seems to require a sunny place, *i.e.*, a higher temperature to fill up the pods quickly, and has hardly been so useful this season as the preceding. Culverwell's Prolific Marrow, sown May 14, is rightly named Prolific, for after having borne one heavy crop, it has shot out new growth from the old stems, and is now full of pods and blossoms; it is sometimes thought not to be quite first-rate in flavour, and I notice that sparrows do not take quite so kindly to it as to Ne Plus Ultra; but it is indispensable where Peas must be had under all circumstances. I have grown it several years, and have always found it a sort to be depended on. Williams' Emperor of the Marrows, sown May 14, though producing a few pods, is not so useful as any of the preceding kinds, at least not here this season. Omega, sown June 11, although planted in well-manured trenches, has become attacked by mildew, and the produce and growth have both been poor. I have grown several other kinds, including some of the early round sorts, but it is unnecessary to notice them further, as this year they have not been a success.

There are several matters in connection with the production of late Peas which are so important that, at the risk of repeating an oft-told, tale I will briefly refer to, viz:—Never plant near trees or bushes, but in the most open and exposed positions that are to be found. Trees not only by their shade and shelter weaken the growth, but they also harbour birds, which are often very destructive to late Peas. Isolate the rows, have them five or six yards apart, if possible, with Potatoes or other crops between them. Plant thinly, in order to ensure robust growth; remember that strength and vigour re-act upon and encourage the roots, and cause them to get a firmer grasp of the soil than they otherwise would have, thus enabling them to bear better, and to resist to a later period the dire attacks of mildew, which is the great enemy to late Peas. Place the sticks in the rows early, so that they may never leave the perpendicular for want of something to which to attach themselves, and when the sticks are finally placed in position, the tops, instead of being close together, and crowded thicker should be several inches apart, so that tall Peas, instead of being forced out from between them, may remain inside and have the advantage of their support. When, owing to the sticks being crowded together at their upper extremities, the plants from want of the necessary space are compelled to escape from them, they are often so blown about and injured by wind that their capacity for continuous bearing is destroyed.

E. H.

Poisonous Fungi.—A few days since, some children rambling in Stanley Park, near Everton, came upon some fungi, which they gathered and ate. A short time afterwards one of the children was taken ill, and appeared to be in a fit, the other children being soon in the same state. They were taken to a surgeon's in the neighbourhood, who administered emetics and applied the stomach pump. It was not until after some two or three hours' exertion that the children had so far recovered as to admit of their removal to their homes, and they continued to suffer from the effects of the poison for some time. This is the fifth case of poisoning by fungi that has occurred in the neighbourhood of Everton during the past week.

Poisonous Fumes from Asphalte Road-making.—At the Thames Police Court, the other day, Mr. Nolan, secretary of the Limmer Asphalte Works, carrying on business at Orchard Street, Poplar, appeared to answer a summons taken out by Mr. Raymond (one of the officers of health to the Poplar Board of Works) "for that on the morning of the 10th August, and on several other occasions, there was a quantity of vapour arising from a large cauldron on the defendant's premises, the said cauldron being used for mixing purposes, and that the effluvium proceeding from the said vapour was of an offensive nature and injurious to health." Mr. Raymond said that he served a notice on July 26 on the defendant with respect to the nuisance in question. Nothing had been done since that time to secure an abatement of it. On August 10 witness visited the works; the cauldron complained of was then discharging a quantity of vapour. In Nov. 1875, notice was served on the company respecting the nuisance caused in the neighbourhood by the effluvium from the cauldrons, in consequence of which one of them was altered in such a way as to stop the nuisance. The other might be altered in a similar way at a trifling expense. Mr. James Johnson, a master shipwright, of 29, Orchard Road, said that his house was within 100 yards of the defendant's premises. The smell of the vapour that came from the mixing cauldrons was very offensive and obnoxious, and had a very bad effect on the health of himself and his family. Dr. Samuel Ellison, medical officer of health to the Poplar Board, stated that his attention had been drawn to defendant's premises. He had seen the vapour arising from the cauldron and smelt the effluvium it threw off. In witness's opinion it was a nuisance and injurious to health. Mr. De Rutzen said he should inflict a fine of £5 on the present occasion, and if the necessary alterations for abating the nuisance were not made, and any further proceedings were taken, the penalty would be doubled, and that would go on until the fine would amount to £200.

The Late Professor Parlatore.—European botany has sustained a severe loss by the death of Filippo Parlatore. He was a native of Palermo, where he was born August 8, 1816, and was therefore only sixty-one at the time of his death; but for many years past he had suffered from illness, and at the time of the Congress at Florence, in May, 1874, was unfortunately prevented from taking an active part in the proceedings. His name will always be inseparably connected with the Royal Herbarium at Florence, which he may be said to have created. It was at his urgent representations that in 1842 Leopold II., the then Grand Duke of Tuscany, founded a national herbarium, and at the same revived the Chair of Botany at Florence, which had been suppressed since 1814, and nominated Parlatore professor, giving him also the directorship of the garden, then a very small affair. Under energetic management and devoted attention, in a few years the herbarium took rank among those of note, and the gift of Webb's fine collection in 1850 rendered it one of the first rank. As an author, Parlatore will be best known by his elaborate "Flora Italiana," commenced in 1848, and unfortunately left far from completion; and his monographs of the Coniferæ and Gnetaceæ, in the sixteenth volume of De Candolle's "Prodomus;" but he was the author of many memoirs and systematic papers. His early writings were chiefly on Sicilian plants, and in 1844 he commenced a "Flora Palermitana," which was never completed. In this year he also published a monograph of the genus Fumaria, and a memoir on the anatomy of Aldrovanda. His account of the Sicilian Papyrus appeared first in 1852, and the fine volume on the species of Cotton was published in 1866. Personally Professor Parlatore was possessed of a singularly amiable and simple character, and will be universally regretted.—"Journal of Botany."

NOTES AND QUESTIONS—VARIOUS.

Negro Largo and Bourjassotte Grise Figs.—As an addition to our stock of Figs in pots, I last year procured plants of these excellent varieties, which, although only in 10-in. pots, produced several fruits each of exquisite flavour. I look upon these two Figs, indeed, as kinds likely to be largely grown, for, although the Fig is an ancient inhabitant of our gardens, it is but comparatively recently that home-grown Figs have become popular dessert fruits. I may add that Figs under glass have this season been exceptionally fine and abundant; but that on open walls the season has been unfavourable for their ripening in anything like first-rate condition.—James Groom, *Henham.*

Climbing Roses and Bignonia radicans.—Which are the best climbing Roses to plant against a house, already pretty well covered with Golden Ivies, Clematis, Ampelopsis Veitchi, &c.? I want a pink or red Rose, both to be continuous bloomers and free growers. I cannot flower Bignonia radicans on an east-facing wall; must it be pruned at all? and when?—J. H. W. T., *Belmont, Carlow.* [Six good climbing Roses to plant against a house are—Gloire de Dijon, Maréchal Niel, Climbing Devoniensis, Madame Berard, Belle Lyonnaise, and Sombreuil. These all bear light-coloured flowers—white, cream, and yellow, or yellowish. The two best red Roses for the purpose are Glory of Waltham, and Belle de Bordeaux; but these, while they are free growers, bloom less abundantly and less continuously than the preceding. The Bignonia radicans is proverbially a shy bloomer; lay in some of the strongest of the one-year-old wood, as it is from this you are most likely to obtain flowers. B. radicans major is a better variety, and blooms more freely. This latter is usually "spurred" in, as you would a Vine, in winter, and it flowers freely under this system of pruning.—W. Paul.]

American Water Weed (see p. 244).—Swans will keep down this weed, and also all other plants except Nuphar lutea. I have to put a fence round Nymphæa alba and Calla æthiopica to protect them.—Acton.

A Redwood.—Mr. James English is still at work on the Redwood tree which he felled at Russian River Station, California, some few months ago. He has already made from it 250,000 shingles, 1000 fence posts, 6000 stakes lumber for a dwelling house and out-buildings, and has timber left for 300,000 shingles. The tree was 14 ft. in diameter.

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> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

NEW TUBEROUS-ROOTED BEGONIAS OF 1877.

Having, during the summer and autumn now drawing to a close, continued my trials and comparisons of all the new varieties of the above-named highly ornamental and continuous-blooming family, and having bedded out over eighty named varieties, I have now to report as to the respective merits and demerits of the thirty-one new kinds sent to me from various sources (principally Continental), all of which I have grown in the open air and carefully compared with the fine introductions of previous years, concerning which I have had something to say at the end of the outdoor blooming season of 1875 and 1876 in the leading horticultural newspapers, which remarks I may, I think, venture to hope have been of some use in guiding amateurs in the selection of a good assortment of these beautiful flowers, which, in the opinion of all who have seen them here this summer, are quite unequalled by any other plant whatever for affording an unbroken continuance of brilliant bloom from the middle of June till the middle of September in the open ground, and for a further month or six weeks after being lifted into pots for the greenhouse before they finally go to rest for the winter towards the middle of November. Of the twenty-six novelties above mentioned eight came to me from Van Houtte of Ghent, being all seedlings raised in that establishment from which we have already received so many fine varieties. This year's lot, however, was of very unequal merit, three only out of the eight being of first-rate excellence; one other, with large and sometimes semi-double male blooms of a pleasing and uncommon deep blush colour, having faults in habit of growth of considerable gravity; the other four were either insignificant or otherwise comparatively worthless. Seven varieties, three of them double-flowered, and four single, came to me from M. Victor Lemoine, of Nancy; all of these, with the exception of one of the doubles, were very good, as might be expected from the source from whence they came. From Messrs. Thibaut & Ketteleer, of Sceaux, came six varieties, all of them raised by the gardener of a neighbouring private gentleman, Fontaine by name, and all of them of first-rate excellence, two of them, indeed, being in my opinion the most beautiful varieties yet obtained by any raiser; these are named Lelia and Exposition de Sceaux—the latter variety, however, is, I believe, not yet in commerce. Another of this set is curiously enough identical with a very fine variety sent out by M. Van Houtte in 1875. From M. Deleuil, of Marseilles, came four varieties of very fair merit indeed. From M. Vincent, of Bougival, came one very fine variety. I shall now proceed to describe these new varieties *seriatim* in the above-named order, as briefly as possible, from notes taken down as each arrived at its full development, and carefully corrected afterwards when any point previously noted was found to need correction.

Van Houtte's Varieties.

1. **James Backhouse**.—A most beautiful variety, with fully-sized, light scarlet blooms, which, when fully expanded, are perfectly flat. The habit of growth is low and spreading, and the flowers, which are produced in great abundance, are well raised above the foliage. This is a really first-class kinds, and one which should be in every choice collection.

2. **Laurent Descours.**—A most lovely variety, of low and spreading habit of growth, with large and handsome foliage, producing with great freedom, on slender footstalks, well elevated above the foliage, an abundance of large and perfectly-formed flowers of a clear bright rose colour, the males of which, when fully expanded, being also perfectly flat. A variety of first-rate excellence.

3. **La Baronne Hruby.**—A light-foliaged, compact-habited variety, producing fully-sized, well-shaped cupped blooms of a lovely deep shade of crimson, borne on slender footstalks, and apparently not over freely produced. This is considered by its raiser to be one of his finest varieties.

4. **Notaire Beaucarne.**—This is supposed to be a semi-double variety, and the male blooms usually have from three to five extra petals. The flowers are of large size and good substance, of a deep blush colour, produced on long and pendulous footstalks. This variety, though by no means perfect as a florist flower, yet, from its size of bloom and somewhat uncommon shade of colour, is likely to find many admirers.

5. **La Baronne Leon Legay.**—A strong, vigorous-habited, upright-growing variety, with medium-sized blooms of a whitish colour when they first show themselves, but which ultimately turn into a good clear pink colour. This, however, cannot be considered as more than a good second-rate variety, with which one of the choice unnamed seedlings, sent me by M. Lemoine, is identical.

6. **Madame Meyer.**—A low-growing, branching-habited, free-blooming variety, with small and inconspicuous flowers of a pale blush colour. It is of not more than third-rate merit, and hardly worth a place in a collection, save for its dwarf habit of growth and freedom of flowering, which may perhaps recommend it to some growers as an edging to a large bed, with taller-growing varieties in the centre.

7. **F. M. Dos Santos Viana.**—A variety with pointed, dark green, marbled foliage, in the way of Pearcei, with medium sized blooms, which are a dull red outside and a deep orange inside, which, however, soon tarnish on exposure to the sun, as do other inferior varieties, so can be considered as a variety of second-rate merit only.

8. **James Duncan.**—An utterly worthless variety, of a dull and washy yellow colour. How it came to be named at all, I am altogether at a loss to understand.

M. Lemoine's Varieties.

1. **Louis Van Houtte** (double).—This is of dwarf, compact habit of growth, the male blooms fully and evenly double, and of a deep shade of salmon colour. A beautiful variety.

2. **W. E. Gumbleton** (double) is of dwarf and compact habit of growth, with fully and evenly double male blooms, of a paler salmon shade than the last-named variety, borne on rather slight footstalks well raised above the foliage. The blooms are about medium size.

3. **Argus** (double) is a light red variety, with an unevenly duplicated centre to the male blooms. A variety of only third-rate merit.

4. **Incendie.**—A pleasing variety, of low and tufty habit of growth, producing medium-sized blooms of good form and substance and of a dazzling light orange-scarlet shade of colour, which, however, unfortunately burn and tarnish when exposed to the sun, which completely spoils the beauty of the blooms after they are a day or two expanded. This variety may not be thus affected when grown in pots for the greenhouse, where its great brilliancy of colour should make it an acquisition.

5. **Jules Janin.**—A really beautiful variety, with large and perfectly-formed blooms, both male and female of a deep clear rose colour, resembling somewhat those of Diamant; sent out by the same raiser last year, but much deeper in shade and more perfect in shape. The foliage is of a peculiar glaucous, metallic hue. This variety should be in every choice collection.

6. **Abondance.** — A compact-growing variety, producing medium-sized, cup-shaped blooms, of a dark claret colour, borne on slender, perpendicular footstalks, well elevated above the foliage, and of about medium size.

7. **W. E. Gumbleton** (single) is an exceedingly fine variety, of stout and upright habit of growth, producing plentifully on strong footstalks, well raised above the foliage, most beautifully cupped blooms of the most brilliant shade of scarlet, somewhat resembling those of a small Tulip in shape. This is considered by M. Lemoine as the most distinct and beautiful variety he has yet sent out. During the latter part of the season all the blooms are male.

M. Fontaine's Six Varieties.

1. **Monsieur Bienoime** is an upright-growing variety, of exceedingly vigorous habit of growth, producing an abundance of fully-sized, handsome blooms, of the same colour as the old variety, intermedia, but of a deeper shade and larger size, and much greater substance. The female blooms also are unusually fine and perfect in form. Were it not that this fine variety unfortunately drops about half its male blooms in an unopened bud state during the earlier half of the season, it would be of quite first-class merit.

2. **Adolphine Fontaine.**—This is a very fine variety, but is curiously enough identical in every way, save a slight variation

in the foliage, with Van Houtte's fine variety of 1875, Paul Masurel, and therefore need not be added to any collection already possessing that variety.

3. **Monsieur Pigny** is of a compact and rather hard and stiff habit of growth, with dark, hairy foliage, resembling that of Lemoine's Oriflame. Its flowers are of good form and substance, resembling in colour, but being a decided improvement in shape on, those of Lemoine's C. Glijm. They are somewhat sparingly produced.

4. **Exposition de Sceaux** is a most beautiful variety, of erect-growing and free-blooming habit, producing extra large and most beautifully cupped male blooms of a lovely shade of deep and intense rose colour, closely resembling Van Houtte's fine variety of 1874 (Charles Raes) in shade, but of infinitely finer form and substance. The female blooms also are quite exceptionally fine. This is unquestionably one of the finest Begonias that has yet been raised, and, when distributed, should be in every choice collection.

5. **Lelia** is also an exceedingly beautiful variety, in habit of growth and fine form and substance of its male blooms somewhat resembling the last-named variety, though the blooms are not quite so fully cupped in shape. The colour is a most lovely deep shade of crimson, somewhat resembling Veitch's Kallista, but of infinitely finer form and substance. It is also an exceedingly free bloomer, and should be in every choice collection.

6. **Hebe.**—This variety is considered by its raiser to be one of his finest hybrids, but unfortunately did not make any healthy growth till late in the season, so that I was unable adequately to form an opinion as to the real merits of the variety. The blooms, as far as I could judge, are light red, resembling those of Vesuvius in shade, and of excellent shape and substance.

M. J. B. A. Deleuil's Four Varieties.

1. **Carnicolor** is a variety of close-growing, tufty habit, with most distinct and ornamental foliage, scimitar-shaped, and curiously crimped at the edges, and producing blooms which are almost white when they first appear, but which afterwards turn to a deep nankin outside, and a clear flesh colour within; the male blooms are of large size, but rather thin in substance. This variety is only suited for pot culture in the house, as when grown in the open air all the male blooms drop in an unopened bud state, which does not happen when grown under glass. This is an exceedingly distinct variety, being, with the exception of Van Houtte's President Schlachter, the only one yet sent out of this peculiar shade of colour.

2. **Violetta** is a variety of medium height and somewhat glaucous foliage, producing, on tall and somewhat weak footstalks, fairly-sized blooms, rather thin in substance and poor in form, but of a pleasing and novel shade of rosy-violet. A variety of about second-class merit.

3. **Cleopatre.**—A variety of spreading and branching habit of growth, with large flowers of a light red colour, of good shape, but not much substance. The female blooms of this variety are a good deal above average merit.

4. **Bayard.**—A fine variety of medium height of growth, producing large and well-formed blooms on rather pendulous footstalks, the exterior of which in shade resembles that of Veitch's fine variety Acme, the interior being of a lighter orange shade. The female blooms are also good.

M. J. Vincent's One Variety.

Reine de Bougival.—An exceedingly floriferous variety, of quite a novel and most acceptable shade of colour, the blossoms, which are of an oblong-cupped shape, being clear cream colour within, the outer middle petals being of a light red. This is admirably suited for the centre of a bed, from its upright habit of growth, and the fine contrast it forms to nearly all other varieties.

Belgrove, Queenstown. W. E. Gumbleton.

New Orleans is said to be built upon a forest of Cypress trees. For 600 ft. down this is the foundation! Rows upon rows of the stumps of the Cypress are found growing over each other, superimposed, each of which layers it is calculated has required ages to form.

A Piece of Mahogany.—There is at present to be seen in the timber-yard of Messrs. M'Kay & Milne, Hutcheon Street West, Aberdeen, one of the largest blocks of Mahogany ever imported into this country. It has been brought from Tobasco, and at the one end it measures 7 ft. 10 in. in diameter, while at the other the measurement is 4 ft. 6 in. As usual with Mahogany logs brought to this country, it has been squared; but if it had been imported in its original form, it would have presented a far larger bulk.—"Builder."

GRAPE CULTURE AT BERKHAMSTED.

Though at all seasons of the year Messrs. Lane's nursery at Berkhamsted is well worth a visit, it is probably never more interesting or instructive than in autumn, when fruits of different kinds are in perfection. In September the Grape-houses themselves are well worth travelling miles to see—houses, some of which were at one time mere sheds with glazed roofs used for the protection of fruit trees in pots and similar subjects in winter, now ranking amongst the best Vineries in England, as far as good Grape growing is concerned. The large clusters of all the most popular kinds of Grapes which have this year been seen at the Crystal Palace, Alexandra Park, and elsewhere, sufficiently attest the quality of Messrs. Lane's Grapes; but in order to acquire a knowledge of the quantity, one must visit Berkhamsted. The Vines here are well attended to, and the heavy crops of excellent Grapes which are obtained from them would surprise even our best Grape growers. The principal Vinery—a spacious span-roofed one, about 130 ft. long and 25 ft. wide—stands on a sunny slope and the Vines are planted on the sunny side of the house, their stems being trained up one side and down the other; they are planted about 6 ft. apart, and from each is carried up an extra young cane for the purpose of inarching new kinds upon, should such a course be desirable. This Vinery contains at the present time nineteen distinct kinds of Grapes, and in some cases two or more varieties are on the same root. On a Buckland Sweetwater, for instance, has been grafted the Black Alicante, and both kinds ripen their crops perfectly, the only difference observable in the fruit of the Sweetwater being that the berries are not quite so large as they formerly were. The original Vines in this house were Black Hamburghs, which were planted about twenty-five years ago; but on them have been inarched from time to time many different new kinds for trial. Should these new kinds prove good, they are retained; if inferior, they are at once cut out. The main rods are about 25 ft. in length, and are allowed to carry twenty-five, thirty, and sometimes thirty-five, bunches each, according to the variety, weighing from 2 lb. to 6 lb. Muscat of Alexandria is grown in a house by itself. The roots of this variety are planted inside in a narrow raised bed, but some of them are also allowed to ramble outside. From these Vines from twenty to twenty-five bunches of very fine Grapes are cut yearly, some of which measure quite 15 in. long, and weigh from 5 lb. to 7lb. The culture here differs but little from that practised elsewhere, except that instead of the shoots being stopped at one or two joints beyond the bunch, five, six, or even more are left. In this way abundance of thick, large foliage is obtained, an essential point if heavy crops of fruit be expected. Abundance of air and light is at all times admitted, and even when the fruit is ripe a brisk fire-heat is maintained, with air on, to thoroughly ripen the wood. Among the newer kinds of Grapes were Pearson's Golden Queen, in good condition, a variety which Messrs. Lane think, when well established, will be valuable. Whilst the Vines are at rest, Fig trees in pots, Peach trees, cut-back pot Vines, and similar plants occupy the houses, the floors of which are covered with a thick coat of sawdust. Vines in pots are started in these houses, but as soon as the permanent Vines begin to shade them they are at once removed to more suitable quarters. In the culture of pot Vines Messrs. Lane are most successful; they grow about 2000 plants yearly, and they are all grown without bottom-heat, a circumstance of importance as regards their after well-being. After one year's growth the canes are cut back to within a few inches of the pots; next year they are started about Christmas, and the bunches which they bear—with plenty of air, light, and room, and abundance of water during the growing season—are the admiration of all who see them. Of one of these Vines, shown in London in July last, a photograph was taken, from which the annexed illustration was prepared; it represents one of six, all equally good. They consisted of four Black Hamburghs and two plants of Foster's Seedling, and collectively they bore eighty-one bunches of Grapes, some of which weighed $3\frac{1}{2}$ lb., and none less than 1 lb. The berries were large, plump, and well-coloured, and the bunches faultless in shape, and it was admitted by the Fruit Committee at South Kensington, where they were shown, that they were the best pot Vines which had ever come under their notice. They were grown in 12-in. pots, and at starting-time were plunged in a bottom-heat of about 60°, the atmospheric night temperature being about 45°, and the day temperature during sunshine 65°. Instead of being tied to the trellis at once, as is usually done, they were twisted round stakes inserted in the pots, which had the effect of inducing them to break regularly at every joint. A moist, comparatively low temperature was maintained until the buds had bursted, when the canes were untied from the stalks and secured to the trellis near the glass, and the temperature was gradually increased. Early pot Vines here are always grown as near the glass as possible, which has the effect of thickening and hardening the leaves. During the earliest stages of growth, strict attention to watering is observed, enough being given to keep the roots moist, but not so much as to saturate the soil. After the fruit is set, copious waterings are given, sometimes twice a day; and whilst the berries are swelling rapidly, weak manure water, the result of mixing fresh horse-droppings and soot, is liberally given them. Indeed, this kind of stimulant is almost the only one used here in Grape growing. Messrs. Lane attribute many failures in growing pot Vines to placing them too near the hot-water pipes, or rather by making the hot-water pipes supply bottom heat, by which means no regularity of temperature can be maintained, as it is necessary sometimes to have the pipes cold and at others hot, according to the state of the weather; grown under these conditions the young fibrous roots are injured, and the crop much impaired. A gentle hotbed of moist plunging material always yields the best results. After the bunches are set the shoots are stopped at three or four joints beyond the bunch, and a little air is left on day and night, which makes the foliage harder and better able to withstand the alternations of cloud and sunshine, which we generally get in spring. A little sulphur is kept sprinkled about the Vineries during autumn as a safeguard against mildew. The soil used for Grape growing here is a heavy, sandy, yellow loam, obtained from the adjoining Common. Tea Roses, struck from cuttings in large quantities, are plunged under the pot Vines, where they succeed most satisfactorily.

A Pot Vine at Berkhamsted.

Peach trees in pots are grown here extensively, in the form of pyramids, for orchard-house culture. They are potted in 10-in. pots, and in good heavy holding soil; the stocks are budded about 1 ft. above the rims of the pots, and the main shoot is trained in an upright direction by being tied to a stake; the side shoots, which are freely emitted from the main stem the second year, are allowed to grow to about 12 in. or so in length, when they are stopped. These trees in pots are grown in houses during the early part of the year, and in summer are placed in a sunny position out-of-doors. Water is plentifully supplied to the roots during the growing season, but when the leaves begin to die off it is, to some extent, withheld, and every inducement is afforded them to thoroughly ripen their wood. The shoots of such trees as are not disposed of are cut back in autumn to within three or four eyes of the main stems, thereby laying the foundation of bushy trees the following year.

The outdoor nurseries, situated on Berkhamsted Common, are very interesting at this season of the year, when thousands of deciduous trees and shrubs are assuming their varied autumnal tints, which contrast effectively with the more sombre hue of the Coniferæ, of which there are here some fine specimens. The Golden Thujas and Retinosporas are just now very pretty, and the bright golden Lawsonia lutea forms one of the most attractive dwarf shrubs which we possess. To fruit trees many acres are devoted, and this year they have borne a fair average crop. Rhododendrons, which are grown here in quantity, succeed admirably, even in the heavy, clayey soil of the district, and they are this year loaded with bloom-buds. Of Thuja gigantea, a specimen from 15 ft. to 20 ft. high, is loaded with cones of a greenish-yellow tint, a colour which contrasts effectively with the deep green of the foliage, rendering the tree, whilst in fruit, unusually attractive. Cornus Mas variegata is grown here in the form of standards, grafted on Cherry stocks; trees of this, from 6 ft. to 8 ft. high, well furnished with good bushy heads of silvery foliage, are very effective when associated with shrubs of a green colour.

C. W. S.

NOTES FROM IRELAND.

Amaryllis Ackermanni Flowering in the Open Border.—One of the familiar glories of the sunny borders at this season in the so-called Belladonna Lily (Amaryllis Belladonna). It is the only one of the genus to which it belongs that, as far as the writer is aware, has been induced to display its beautiful flowers out-of-doors. This, it appears, need be no longer the case, for a fine variety of A. Ackermanni, viz., A. A. splendida, is just now flowering freely in the open border in front of the central glass range at Glasnevin, where it forms a striking object, far eclipsing A. Belladonna. Here is a hint for further trials in this direction.

Hedychium Gardnerianum Flowering Out-of-doors.—This beautiful plant is in flower now in the open border at Glasnevin, though the wet and chilly summer was by no means favourable to bringing about this result.

The Great Vine at the Viceregal Lodge, Dublin.—The great Vine at the Viceregal Lodge, Phœnix Park, may fairly claim to be the finest example of a single Vine, grown on what is called the extension system, to be found in these islands. It is possible that there are other monster Vines monopolising entire houses, and covering a larger space, but we doubt if the Finchley or any other large Vine presents such a picture of successful Grape culture as does the large Vine at the Viceregal Lodge. The crop this year is perhaps the heaviest it has yet matured, certainly the size and weight of the bunches are beyond the average. Not a few of these would turn the scale between 3 lb. and 4 lb., and the weight of the general run of bunches will be fully 2 lb. each. The number of bunches which are strung along the lines of rod with almost mathematical precision is somewhere about 500, and every one of them fit for the exhibition table. The heaviest bunches are, as a matter of course, to be found at the extreme end of the house opposite to that at which the Vine is introduced, and from which rods are conducted horizontally the entire length of over 70 ft.—"Irish Farmers' Gazette."

Yucca Treculeana Hardy.—Mr. Hemsley (see p. 328) need not have the slightest doubt of this plant being hardy. It may be seen growing at Messrs. Veitch's, Mr. Parker's, and various other nurseries in the neighbourhood of London, and it is as hardy as it is fine in form.—O.

NOTES OF THE WEEK.

The Tomato Disease.—We hear from M. Vilmorin that in France, as well as in England, there is much disease among Tomatoes, no doubt occasioned by the long continuance of wet weather, which has also been so destructive to Potatoes, the same disease being common to both. Large quantities of Tomatoes have been destroyed in the neighbourhood of Paris.

The Irish Heath (Dabœcia polifolia) **in Hants.**—This fine and well-known plant has been found in Hampshire by Mr. M. Moggridge. We hope to publish a note on the subject by him shortly. With it grows Erica vagans, and not on serpentine rock, on which it is usually found.

Wistaria japonica in Fruit.—An established plant of this Wistaria in Mr. Parker's nursery, at Tooting, is now bearing numerous fruits or seed pods. In shape they resemble those of a French Bean, but are blunt at the ends.—S.

Eucharis amazonica.—We have a double row, between 50 ft. and 60 ft. long, of this lovely Amaryllid on a stage in our conservatory. One row consists of plants in 12 in. and 15 in. pots; the others are in 6 in. and 9 in. pots. Some of the plants in the 6 in. pots are furnished with four flower-stems, and on a plant in one of the 15 in. pots I counted forty-one flower-stems, and on each stem from five to seven flowers in different stages of development. The same plants also flowered well in the spring. I find those in the 6 in. pots to be very useful both for dinner table and sitting-room decoration, and when intermixed with Dracæna terminalis the effect is in all respects excellent.—R. C., *Taverham Hall, Norwich.*

Clematis flava.—This yellow-flowered Virgin's Bower is comparatively seldom seen; it however well deserves culture on account of its free-flowering character and the colour of its flowers, which, when associated with white and blue kinds, form a pleasing yet striking contrast. In the Exotic Nurseries, Tooting, it is planted at the foot of dead roots and posts, over which it scrambles and forms a striking object.

The Paris Exhibition Works have made good progress lately; both the Trocadera and the Palace on the Champs de Mars are beginning to assume a less chaotic appearance. The Horticultural Society has decided to hold an international congress next year at their hotel in the Rue de Grenelle, and at the same time a horticultural and botanic show. The Prince of Monaco obtained of M. Krantz a place wherein to show the floral productions, as well as the fruits and vegetables of his principality. This will not be one of the least interesting parts of the exhibition.

New Tuberose.—The new Tuberose called Pearl has a finer spike, and is dwarfer and more double than the common variety. Mr. Vertigans, of Edgbaston, from whom I purchased my roots of it, states that single blooms of it made up into little bouquets with Maiden-hair Fern meet with a ready sale. Its blooms are beautifully white, semi-double, large, and delightfully fragrant. — J. Trevor, 59, *Wellington Road, Birmingham.* [The specimens sent seem to be a little larger than usual.]

Irises in Autumn.—In Mr. Barr's window in King Street, Covent Garden, may now be seen Irises in bloom grown in glasses like Hyacinths, and very pretty they look. A piece of Moss wrapped round the stems above the roots, prevents them from falling too far into the glasses, and forms a green base for the flower-stems. The kind grown in this instance is the charming little blue-flowered Iris alata; but others would doubtless succeed equally well.

Worcester Pearmain Apple.—Of this beautifully coloured and finely flavoured new Apple, Mr. Richard Smith, of Worcester, has sent us samples. He states that it crops as freely as Lord Suffield, and that its season is from August to October. It is alike suitable for culinary purposes and for dessert, and its brilliant red colour will make it a good market fruit.

Locked Gates at Kew.—In the "Times" report of the Library Congress there are a few words which may be read with advantage in connection with the need of making the gardens at Kew accessible to the public throughout the day. Professor Justin Winsor said "that a period used to be set apart in America for cleaning, but now the cleaning is done early in the morning, and the library is open without intermission from year's end to year's end." It is a greater folly to shut up a rich garden during the best hours of the day than a library, however rich. Kew Gardens cost the people of England over £20,000 a-year, and it is unjust and unreasonable that the poorest person taxed for its support should be excluded from its use at any reasonable hour of the day. It should be opened at six in summer and at dawn in winter; numbers of persons would run out from London by an early train who have not the opportunity to go in the afternoon. The folly of opening a garden so late is all the greater from the fact that it, unlike a library, cannot be used at night. As regards Kew, nobody, so far as we know, has asked that the houses be opened before the men have had time to finish their morning work in them, but we observe that even in cases of greater difficulty public servants can, when they wish, make institutions convenient to the public. On the same occasion, Mr. Soden Smith said "the Kensington libraries are not closed on any week days; and on three days in the week they are open till ten o'clock at night. The classification of the library was made without closing the library for a single day."

The Purple Giant Autumn Crocus.—We have seen a fine purple-magenta specimen, with Mr. Ware, of Colchicum speciosum, which is certainly a most important plant. As figured in The Garden, the blooms are of a lighter colour than those under notice. This plant cannot fail to take a leading place in all gardens amongst hardy plants, and the fact that it varies so agreeably in colour makes it all the more valuable.

Pentstemons in Autumn. — Some of the newer and finer kinds of Pentstemons may still be seen in bloom in Messrs. Dicksons & Co.'s Nursery, Edinburgh. Though the flowers, individually, are not so brilliant as they have been, yet in masses they are most valuable, and, if frost keep off, will be effective for some time to come. Many of them are seedlings of an improved strain, in the production of which Messrs. Dicksons have been singularly successful.

Autumn Windflowers.—For London gardens, as has been before stated, there are no better plants than Anemone japonica and its varieties. Even now, amid a smoky atmosphere, these plants are flowering abundantly; indeed, in almost any position or under any circumstances these Windflowers appear to succeed, but they are of course best when planted in a deep, rich, sandy soil, and in an open situation.

Pyrus Maulei—Handsome fruit of this new and valuable shrub have come to us from Messrs. Maule, of Bristol, and Herr Max Leichtlin, of Baden Baden. The branches from Messrs. Maule are densely laden with large and singularly handsome fruit—some golden-yellow and some beautifully marked with red on one side. Peeled and cut in two, or in slices, and made into preserves like Quinces, this Pyrus is said by Herr Max Leichtlin to be most valuable.

English-grown Azaleas.—The demand for Indian Azaleas in our markets in spring is so great that many thousands are yearly imported from the Continent. It is, however, now thought that those of English growth can, by liberal culture, be produced at almost as rapid a rate; and, moreover, the best kinds for the purpose can be procured with greater certainty than from Continental sources. In Messrs. Low's nursery at Clapton, we remarked the other day many thousands of healthy young plants of home growth, and also thousands just grafted for succession.—S.

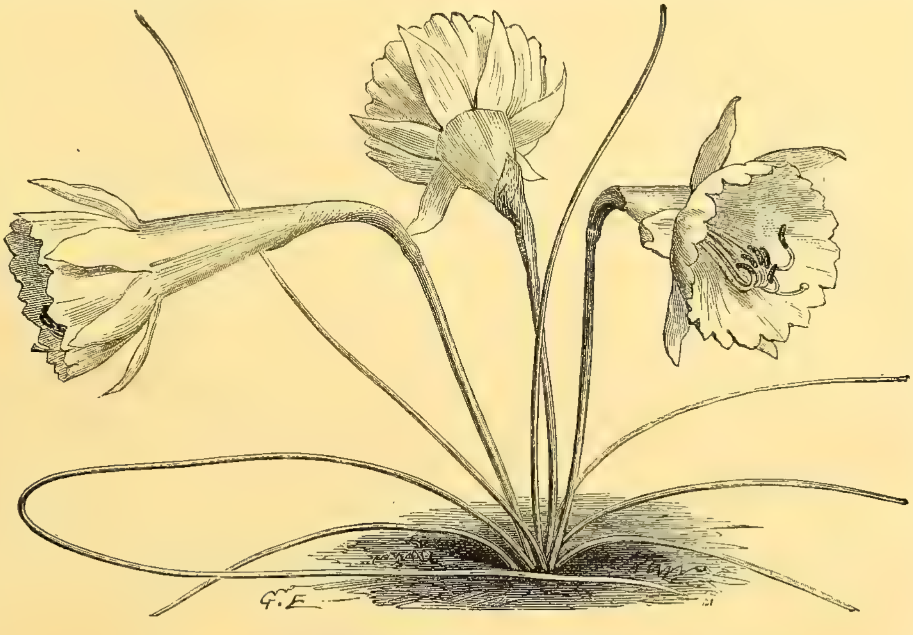
American Pomological Society.—The sixteenth session of this Society was held in Baltimore on September 12 and 13, and, although hardly so large as on some former occasions, consisted of delegates from twenty of the States. It was stated at the meeting that the present aggregate area in fruit culture was estimated at 4,500,000 (four million, five hundred thousand) acres, comprising 112,000,000 (one hundred and twelve million) Apple trees; 28,000,000 (twenty-eight million) Pear trees; 112,000,000 (one hundred and twelve million) Peach trees; and 141,000,000 (one hundred and forty-one million) Grape Vines. The value of the products were estimated at 50,000,000 (fifty million) dollars for Apples, 14,000,000 (fourteen million) dollars for Pears, 56,000,000 (fifty-six million) dollars for Peaches, 2,000,000 (two million) dollars for Grapes, 5,000,000 (five million) dollars for Strawberries, and for other fruits, about 10,000,000 (ten million) dollars. The entire fruit crop, President Wilder estimates at nearly one-half the value of the Wheat crop. This includes the Oranges, Olives, Almonds, and Figs of California, and the extensive Vineyards of that State.

The New House in Hyde Park.—Mr. Brithwaite writes to us as follows from 12, Sussex Gardens:—"On returning to town, after a six months' absence, I was astonished to see in the very centre of Hyde Park a newly-erected three-storied villa containing some thirteen rooms. This has, as I learn, been built for the head gardener of the Park at the expense of Mr. Albert Grant, in lieu of a lodge which was demolished at the instance of Mr. Grant, when Kensington-house was in course of erection. I also understand that a question has been asked in the House relative to the expense of this villa; and when it was answered that it had been built at Mr. Grant's expense, the subject was dropped, as if the sumptuary side of the question was alone of importance. But the expense of this wretched villa is the very smallest part of the question. I should like to ask, (1) by whose authority it was erected? (2) by what right a large house is built in the centre of a park of which we are constantly told that every foot is sacred to the public? It is both a terrible eyesore and, what is more important, occupies a very considerable space of ground. The authority that builds one house can, it may be presumed, build half-a-dozen; and what guarantee have we that in time the entire Park will not be covered with similar erections?"—"Times."

THE FLOWER GARDEN.

NARCISSUS BULBOCODIUM AND ITS VARIETIES.

The accompanying illustration represents a charming group of Daffodils, which are exceedingly beautiful either in pots, borders, or planted among Alpines in the rock garden. They are perfectly hardy, can be readily obtained, and are easy to grow under certain conditions; nevertheless, they are rarely seen outside a nursery or botanic garden, a circumstance which I believe to be owing to bad judgment in selecting places that are not adapted for them. All the varieties of this group are natives of the south of Europe, Algiers, and other places bordering on the Mediterranean, where they receive a greater amount of heat to ripen the bulbs than in England; consequently warm, dry aspects should be selected for them, and they should be planted in sandy loam; a heavy, wet soil will not suit any of this group. But soil is of little importance; I have seen them growing freely in almost pure sand, and quite as luxuriantly in stiff loam; but the latter was in a well-drained situation and in a warm aspect. Where the soil and situation suit them, they soon form luxuriant masses of golden-yellow flowers, which are generally produced in April and May, but in some localities earlier and in some later. For edging small beds, for clumps in the borders, or for interspersing among Alpines in the rock garden, the different varieties of Hoop-petticoat are adapted. This spring I counted twelve fully-expanded flowers upon a single plant of the variety called N. tenuifolius, and nearly as many buds were just emerging through the ground. They not only produce abundance of flowers, but the individual blossoms last longer than those of any of the ordinary Narcissi. For indoor decoration in February and March they are exceedingly useful, and the Algerian varieties come in as early as January. From six to ten bulbs of them should be put into a 5-in. or 6-in. pot early in autumn, and plunged in a cold frame, bringing them indoors as they show flower. The most distinct varieties are :—



White Hoop-petticoat Narcissus (N. Clusii).

N. (Corbularia) serotinus.—This is figured in Sweet's "Flower Garden," t. 164, and is called the Late-flowering Hoop-petticoat. It has long, twisted, dark green foliage, from 15 in. to 18 in. in length, lying prostrate, or nearly so, on the ground; the flowers are larger than those of any of the following, and are of a bright golden-yellow, set on scapes 6 in. high.

N. Bulbocodium, the commonest form, has flowers similar in colour but smaller than those of the preceding. The foliage grows from 6 in. to 9 in. in length, erect, or slightly recurved, and the flowers vary (according to situation, &c.) from 4 in. to 6 in. in height.

N. tenuifolius.—This (figured in Sweet's "Flower Garden," vol. ii., p. 114) is the prettiest, earliest, and most distinct of all the yellow-flowering varieties. Its foliage is very slender, 1 ft. or more in length, and of a dark green colour, slightly glaucous. The flowers, which are numerous (from six to twelve being fully expanded at the same time upon well-established bulbs), are borne on scapes from 3 in. to 4 in. high; they are smaller and paler in colour than those of any of the preceding, but their abundance, nestling among the slender foliage, renders this Narcissus the best and most showy of the group.

N. (monophyllus) Clusii.—This, a white-flowered form recently re-introduced from Algiers by the late Mr. Munby, is an old plant known and described by Parkinson more than 200 years ago, and perhaps I cannot do better than give his description of it, which is as follows:—"This Daffodill hath two or three long and very greene leaues, very like vnto the small yellow Rush Daffodill, formerly described, but not altogether so round, among which riseth vp a short stalke, seldon halfe a foote high, bearing at the toppe, out of a small skinnie huske, severall smalle white flowers, sometimes declining to a pale color, hauing six small and short leaues, standing about the middle of the trunke, which is long, and much wider open at the mouth than at the bottome: the small outer leaues are a little tending to greene" (which I must confess I have not seen). This Daffodil is at present rather scarce, and but few have succeeded in flowering it, owing, I believe, to the bulbs being kept out of the ground too long. It commences growing early in September, and flowers in December and January, and, I think, will not prove hardy except in very warm, sheltered situations in the rock garden. Even if the bulbs will stand frost, the foliage and flowers must get injured by the weather; hence it will be necessary to grow it in pots, or protected under a hand-light if planted out. I have plants of it at the present time growing beautifully in an open frame; the foliage is at least 6 in. high, and many of the strong bulbs have five and even six leaves, and I expect to see the greater portion of them flower this winter. These bulbs were planted in August immediately they were received from their native habitat, in a compost of one-third sand, loam, and well-decayed leaf-mould. Last year I flowered numbers of them, and when taken up the bulbs had greatly increased in size, and showed, in an unmistakable manner, an inclination to divide as other varieties do. A. P.

BRITISH TOAD-FLAXES.

Though they will be treated of in due course in my papers on "The Garden of British Wild Flowers," I wish to mention specially some little-cared-for Toad-flaxes (Linaria), to which my attention has recently been directed. At the recent Reading flower show I was much pleased with a collection of over 200 flowering specimens of British plants from the neighbourhood of Henley, exhibited by Mr. Stanton, gardener at Park Place, on behalf of a botanical class, consisting, I believe, of his assistants. I had no opportunity of speaking to Mr. Stanton on the subject; but two plants especially attracted my notice. They were labelled respectively Linaria repens and L. Pelisseriana, and there can be no doubt as to the correctness of the first name. Linaria repens is unfortunately a rare plant in a wild state, occurring chiefly in old chalk-pits, or on walls. It is a perennial, bushy-growing plant, with small, greyish foliage, and multitudes of delicate little pale flowers of a bluish-lilac or pale violet colour, striped with a darker tint. I found it some years ago at Caversham Warren, near Reading, and it has been recorded from Wargrave, so may well be truly wild near Henley. I never saw it in cultivation till I paid a visit a short time back to Mr. Ware's nursery at Tottenham, where, I believe, it bears another name. Linaria Pelisseriana is an erect, annual plant with purple flowers, wild only "near St. Ouen's Pond, Jersey." I have had a somewhat doubtful dried specimen shown me from St. Vincent's Rocks, Clifton, and I cannot, without examination, be sure as to the Park Place species, which is probably an escape, and may have been identical with a pretty, old-fashioned looking species common in gardens and on walls about here (Hemel Hempstead), which is, I believe, though I have no books of reference, L. purpurea. This is a shrubby perennial with leaves from 1 in. to 2 in. long, and racemes from 4 in. to 5 in. long, closely covered with purple flowers about ½ in. in length. Every one knows the "Mother of Thousands," or Ivy-leaved Toad-flax (L. Cymbalaria), which in Italy is called "Erba della Madonna." Mr. Ruskin has pointed out how fond Bellini is of filling up the rents of the ruined walls in his exquisite pictures with its no less lovely clusters. The violet Alpine Toad-flax (L. alpina) is known and deservedly cultivated, whilst the Broom-leaved species (L. genistæfolia) was one of the prettiest things I saw at Tottenham; but I could not then help thinking of the uncultured beauty of our commonest species (L. vulgaris), and that, were similar attention paid to the Linarias they might soon rival their near relatives the Antirrhinums. By-the-by, I can fully corroborate what "C. S." says on the lovely show of this group at Tottenham. Their colours blend admirably, and the beds of mixed colours were, in my opinion, very beautiful. G. S. Boulger.

The Posting House, Hemel Hempstead, Herts.

HARDY PLANTS AT EDINBURGH.

We always find autumn the best time for dividing our herbaceous plants, and gain a year by so doing. The soil is warm, or ought to be so, and the nights dewy; thus the divisions get well rooted before frosts come on, and in spring there is always a greater press of work that must be got through.

Tellimas.—We find the flower-spikes of these very useful in the shape of cut flowers; the thin wiry stalks bearing many yellowish bells, dotted through an otherwise flat glass of flowers, have a good effect. I am so often asked "Is this a sort of Lily of the Valley?" that it is plain the plant is not much known; like Lily of the Valley, the uppermost bells should be open before cutting, else the upper part of the stalk droops, and will not stand in water: it lasts long, if cut in a fit state. At present the leaves of Tellima grandiflora are very prettily coloured and veined, and suit well with those of its relative Heuchera Richardsoni. Such I saw at Kew the other day is the correct specific name of this old favourite of ours—a plant which we cannot do without in arranging flowers, or filling up a space in a mixed border where any decided colour would offend.

Lychnis Haageana.—This is the only really scarlet flower in early summer with which I am acquainted, about 1 ft. high. It is quite as bright as the everlasting scarlet Pelargoniums, and in good condition before they are; once raised from seed, it is easy to save the exact shade of scarlet you wish: also white; and some have foliage and stalks as dark as those of Lobelia fulgens, which renders the flowers intensely red.

Libertia grandiflora.—This is another early summer flowerer, which I am always asked for. Its pure white Tradescantia-like flowers are very beautiful, and of firm substance. A Libertia, from Otago, we find well worth growing; it is a little later than L. grandiflora, has smaller blossoms and longer stalks, tipped with black, which gives it a distinctive character. L. grandiflora is, however, the favourite, I find, with non-botanical visitors.

Mule Pinks.—Beds of these last long, and by mixing young layers with old plants, a succession of bloom is kept up. We only grow the perfectly hardy sorts—some four or five—pink, rose, crimson, pure white, and (best of all) a neat little parti-coloured flower, which is lost about Edinburgh, and which I was delighted to come upon lately at Parker's, Tooting; its foliage is quite like that of a true Pink, and it is very close and compact in growth. Names of Mule Pinks seem to be local; at any rate, it is not wise to purchase by name: for instance, there is no end to kinds called multiflorus.

Alpine Poppies.—These are charming plants; a bed of the white, yellow, and orange dotted among Campanula turbinata has produced flowers for four months, and there are still numbers of the pretty black-haired buds to come out. Earwigs and slugs seem to find Poppy-flowers toothsome, soporific perchance; but it is interesting to watch the buds in water splitting up their calyxes, and extending and unfolding their wrinkled petals, and at last raising their heads; it is a slow process, and they keep good a full week in water, a remarkable time for so delicate a single flower as Papaver alpinum; the little double French annual one does not last nearly so long a time.

Vittadinia triloba.—This is still not sufficiently grown, judging by the queries I am asked about it and the requests for seedlings which come up everywhere (in the Box and other edgings of the walks), and seeds occasionally ensconce themselves in pots in the greenhouse. Of these truant plants we are glad, as they save us touching our little beds, and I am always anxious to encourage a fancy for a hardy plant.

Single Dahlias.—This season has proved the superiority of single over double Dahlias, as they do not require so much sunshine to open. D. coccinea, aurantiaca, the little D. glabrata, and Cervantesi, are the single sorts which we have. Cervantesi is a tall, graceful-growing plant, compared with other Dahlias; its fault here is its lateness in flowering, but the small, unstiff, orange flowers are very attractive, and the foliage is also small and can be cut. I got it and aurantiaca from Mr. Harpur Crewe. One great charm of single Dahlias is their turning to the sun, which they always do if they can, and thus form favourite resting-places for Tortoiseshell and Red Admiral butterflies, and excellent exercising grounds for numerous smaller insects; these parade round and round their yellow centres, and are, to my mind, a valuable addition. Single Dahlias are invaluable in a cut state, being free from earwigs.

Œnothera riparia.—I still maintain that this is the best, and, in fact, the only yellow evening Primrose for small beds, edgings, or as a groundwork for other plants. It becomes a mass of delicate flowers, is perfectly hardy, and goes on flowering even after the first frosts. Those plants bloom first that are left in the ground; we, however, like to be prudent, and lift a few or strike a potful of cuttings in case of accident, but in the end this reserve stock is generally given away. The old plants may be divided in spring to any extent. I have again got hold of the pretty but capricious Œ. speciosa; once it was a weed with us; we tried to keep it within bounds, and lost it for years. Only let it establish itself again in our mixed border, and it shall not be meddled with.

Erodium maritimum.—This some call a Geranium. It seeds freely, and flowers during seven and even eight months of the year. Late in autumn its pale lilac flowers veined with a darker shade, after the fashion of Geraniums, are valuable, and the buds come out in water.

Mimulus cardinalis.—This is a favourite with us, and grows beside another good plant, viz., Calimeris Diplopappus, whose pale lilac Aster-like flowers look well by the brick-red Monkey-plant; they grow the same height, and have both been in flower many weeks. The rose-coloured variety, which came out at the same time as M. cardinalis, we have lost for the present, but it must be somewhere.

Monarda didyma.—This we grow in quantity, as both leaf and flower are sweet, and therefore of use for making into nosegays for the Blind Asylum. It has flowered extra well this season, and we are quite tired of making blanks in our edging of it, and hearing "how well that handsome red flower looks in your glasses," and so our friends must have a plant. We have white, purple, and magenta varieties, but the old didyma (Bergamot) is by far the best; the red blotches at the joints and axils of the leaves are a good addition.

Scabiosa caucasica.—This is a very fine plant. Mr. M'Nab was the first to tell me how well it stood in water, and how its particular shade of lilac came out in candle light. It has a new name now, which I never can remember. It is sure, however, to be called a Scabious at first sight by all who see it.

Lysimachia punctata.—This is at present in blossom, and a very light, useful, yellow flower it is.

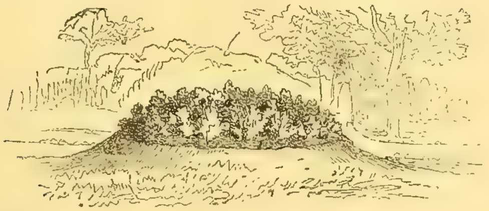
These are a few of the many herbaceous and hardy subjects which have this season shown us the advantage of not depending on bedding plants, and our hardy borders have been much envied by our neighbours. Where there is a variety of plants grown some are sure to revel in what is called a bad season, and I must say that I love to see our plants happy, even if one be rather downcast and miserable oneself. F. J. Hope.

Wardie Lodge, Edinburgh.

Eulalia japonica.—Will you kindly spare me room for a line, just to poin out that in your notice of this plant in The Garden of last week (see p. 333), you have made me say exactly the reverse of my intention, by the omission o the word *not* in the last line, which should read—"it is probable that the variegated forms will not reproduce themselves by seeds."—W. Thompson, *Ipswich*,

"COCKED-UP" BEDS.

Among the least agreeable features of our modern flower garden are beds on the top of small embankments. The fashion came first to us from Paris. It was once employed with a motive generally to secure a greater degree of heat to the more tender plants. Now beds of the freest-growing flowers may be seen fortified with these ugly banks, though no more in want of their assistance than a group of Docks. In any garden well laid out, the shape of the beds must not be obtrusive. In the gardening of the future, the plants, not the bed, will be what meets the sight. Over the whole of a large garden, the impudent bed shown in the accompanying woodcut stares at one, not when it is full only, be it observed, but when it is bare of plants. We believe the plan to be as needless as it is offensive. Given a good warm soil and good drainage, there is no need for this awkward elevation of the mass! On the contrary, there is often decided advantage in having the roots in a cool medium, not more exposed to evaporation than need be. The gentle rise towards the centre of a bed sometimes desirable, is easily secured without raising the edge above the turf, from which all flowers should spring.



SHOW AURICULAS.

As this is the season at which beginners in Auricula culture should commence to form their collections, I have thought it desirable to furnish the names of a few kinds that can be obtained without much difficulty, and which are all on the whole easily grown:—*Green edge*—Apollo (Beeston), General Neill (Trail), Imperator (Litton), Lord Palmerston (Campbell), Lovely Ann (Oliver), and Prince of Wales (Ashton). *Grey edge*—Colonel Champneys (Turner), Conqueror of Europe (Waterhouse), Privateer (Grimes), Ringleader (Kenyon), and Robert Trail (Lightboy). *White edge*—Catharina (Summerscales), Earl Grosvenor (Lee), Ne Plus Ultra (Smith), Robert Burns (Campbell), Sir Robert Peel (Finlayson), and True Briton (Hepworth). *Selfs*—Blackbird (Spalding), Formosa (Smith), Lord Clyde (Lightbody), Master Hole (Turner), Mrs. Sturrock (Martin), and Mrs. Smith (Smith). These can all be had, and they would vary in price from 2s. 6d. to 5s. each. Those who have qualified themselves, by a certain amount of success with the commoner flowers, to ascend to a higher level of Auricula culture, should endeavour to obtain such fine varieties as:—*White edge*—John Waterson (Cunningham), Smiling Beauty (Heap), Ann Smith (Smith), Trail's Beauty (a variety that is apt to come grey), and Taylor's Glory. *Green edge*—Prince of Greens, Booth's Freedom (a grand old sort, remarkable for the dense black of its body colour), Trail's Anna (very fine), Alderman Wisbey (Headly), Admiral Napier (Campbell), and Page's Champion. *Grey edge*—Syke's Complete, Lancashire Hero (Cheetham), Alderman C. E. Brown (Headly), George Lightbody (Headly), Richard Headly (Headly), and Read's Miss Giddings. *Selfs*—C. J. Perry, Lord of Lorne, Duke of Argyll, Pizarro, Petronella (Headly), Spalding's Metropolitan, Sim's Eliza, and Ellen Lancaster.

No one can expect to succeed with Auriculas unless he has a frame in which to grow them. During the winter, the frame should be under a north wall or hedge, so that the plants might face the south, and in summer it should be in a north aspect. During the autumn and winter months, the frame should be raised on a dry bottom, so as to ensure, as far as possible, freedom from damp. In the north of England—and, indeed, in the midland districts—a cold greenhouse is a good place in which to winter the plants. There should be provided a stack of fresh turf, so that it can lie by and decay, some leaf-mould, and charcoal, bruised to the size of split Peas. Charcoal is much better than sand for keeping the soil open; besides, it is of advantage as a fertilizer. The cultivators of the largest collections scarcely find it necessary to put their plants into a larger-sized pot than a 5-in. one; and some of the best kind of pots an Auricula cultivator can keep by him are long Toms, which are deep and narrow, and which suit Auriculas well. As prizes are often offered for Alpine Auriculas, it will be well to direct attention to some of the best exhibition flowers. For the sake of convenience the Alpine Auricula may be divided into two classes, viz., the shaded and the unshaded flowers. The shaded flowers have a white or golden centre on paste, with a marginal body-colour shaded off to a paler colour, thus showing two distinct tints. An unshaded variety shows a self-coloured flower. At the National Auricula Society's exhibition at Manchester, only shaded flowers can compete for prizes; but at the Southern show, held at the Crystal Palace last April, unshaded flowers were permitted to compete. Of the shaded flowers, some of the best for exhibition purposes are Gorton's Mauve Queen, Gorton's Diadem, Turner's Bronze Queen, Turner's Dolly Varden, Turner's Queen Victoria, Borealis, Conspicua, Turner's Novelty, and John Leech. Of the unshaded flowers, the finest are Napoleon III. (Turner), John Ball (Turner), Vesuvius (Turner), Selina (Turner), Spangle (Turner), King of Crimsons (Turner), and Diamond (Turner). As a general rule, at Auricula exhibitions the show varieties carry but one truss of flowers; the Alpine varieties as many as can be produced in good condition.

The shaded Alpines are generally grown in poorer soil than the unshaded flowers, but cultivators differ in regard to this matter. If the soil be too poor, it is said, the individual pips will be small in size and they will lack expression. The leading growers in the neighbourhood of Manchester cultivate their Alpines in good soil, and perhaps the cool, moist atmosphere which prevails there in the springtime has something to do with the exquisite shading produced on the flowers. In the north it has been found advisable to separate the Alpine flowers on the exhibition table, and they are divided into two classes, those with gold centres and those with white or custard centres. So much preference was given to the varieties with gold centres, that fine flowers with white centres stood no chance agains them. The presence of the golden centre gives a striking effect to the flowers, and it is worthy of remark that nearly all the unshaded flowers have golden centres. Alpine Auriculas are all pretty and well worthy cultivation; but he who grows a choice collection of the show kinds, with the view of raising seedlings, should not permit any Alpine varieties to be grown near them. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Anemone japonica alba.—This is one of those hardy plants of which it seems impossible to write too often. It is a most valuable autumn flower and one that must be universally grown when its merits are better known. Small plants of it with flowers a couple of inches in diameter afford but a poor indication of what it is when thoroughly established as a hardy border plant. In a year or two, in good, deep soil, it will reach a height of 5 ft., and be literally loaded with large, pure white flowers, almost rivalling those of the Eucharis in purity, and measuring nearly 4 in. across. The original Anemone japonica is also a very useful plant and well worth cultivation, but japonica alba and its pink compeer, intermedia, are in every way invaluable.—A.

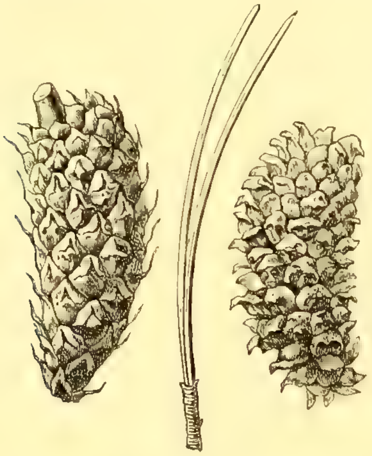
Ivy Embroidery.—It has not yet occurred to the masters of decorative gardening that the Ivies are capable of furnishing most valuable material for certain kinds of embroidery planting, which probably would tell with best effect in a large garden wherein spring flowers play an important part in the annual colouring. There are not many varieties adapted for such work, but the few that are evidently best fitted for it are conspicuously appropriate. Thus amongst the climbers we have Marginata grandis, which would probably be the best for forming bands of silver, and there are several others of the same section available where a weaker growth would be required, and in some soils the pretty Marginata rubra would develop a fine tone of red in the winter. For yellow leafage there is no climbing variety good enough, but the well-known tree Ivy named aurea produces a brilliant growth of orange-coloured leafage, and in a poor soil is very constant. The little minima is distinctly purple in winter, and Hibberd's Emerald would be the most useful of the green class, as it is a better colour during winter than the Irish Ivy, which is too dark for the purpose, and from March to August it presents a rich and dense growth of golden-green leafage. Others would come in, of course, as nigra for a very dark green, and lucida for glossy bronze, tortuosa for a neat growth of very dark, highly-polished leaves. In any case, the surest to begin with are Marginata grandis, aurea, and Emerald. With these to form the more distinctive outline, it would be no difficult matter to fill up with a selection of a dozen or so of the neat growers with both green and variegated leaves, because for certain parts of a pattern the silver tree Ivies would come in well. A garden boldly framed in Ivy embroidery would have a charming appearance all the winter, and if a good assortment of spring flowers appeared amongst the Ivies from March to May, the Ivies would afford, in their interest, a strong, definite, and rich foundation or setting, and quite a new and characteristic style of gardening would be the result.—"Gardeners' Magazine."

TREES AND SHRUBS.

PINUS CONTORTA (Dougl.).

SYN.—P. TAMRAC (MURR.).

You ask for information regarding the species of Pine, the cone of which is figured in the accompanying woodcut under the name of Pinus Tamrac. I am sorry to say that I am responsible both for the species and the name, and I wish both to be cancelled. It was in the winter of 1868-9 that an American collector (Mr. I. Q. A. Warren) brought to this country from California a collection of objects of natural history, among which were specimens of Pine cones, shells, &c. Some of these were acquired by the British Museum, and I obtained a few of them, among which were the cones of this species. Mr. Warren informed me that it was a new species found on the route of the Pacific Railway, and that it was called by the settlers the Tamrac. It never occurred to me until too late that this was a mere corruption of the word "Tamarac," applied by the Canadians to the American Larch (Larix pendula), and doubtless applied by many later to this species from a fancied resemblance. I recognised it as identical with specimens sent home by Jeffrey to the Oregon Botanical Association, and which had been submitted to Sir William Hooker and Dr. Lindley, and returned as undescribed, although it was very shortly afterwards described by Newberry in the Pacific Railway Reports. On examination, his description did not seem to me sufficiently to correspond with Mr. Warren's specimens, and in a hasty moment I described it from them in 1869 as new. Four years afterwards (in 1873) I had the opportunity of seeing the trees growing in their native country, and at once saw that there was only one species concerned, although considerable variation occurred in the details of the cone. The published descriptions are misleading. Thus, Gordon says the tree is 15 ft. or 20 ft. in height. The most characteristic specimens that I saw were 50 ft. to 60 ft. in height. The scales of the cones, when handled or fallen, lose their long, projecting mucro, which, when uninjured, is one of their most characteristic features. But there is no mistaking the tree itself with its unrifted bark and other characters. Seeing that I have contributed to embroil the synonymy, I am very glad to have the opportunity of making the retractation and apology which I now do.



Pinus contorta.

Andrew Murray.

THE FORESTS OF ATHOLE.

The Duke of Athole's famous plantations at Blair Athole and Dunkeld have engaged the pens of numerous writers from the period of Loudon's compilation of the "Arboretum" to the present time. Mr. McGregor, who holds the office of forester on the Duke of Athole's domain, has enabled a correspondent of "The Agricultural Gazette" to repeat an old but interesting story. Previous to the accession of the great planter, Duke John, in 1774, two Dukes of Athole had planted Larches. In 1738 Duke James planted, at Blair Athole and upon the lawn at Dunkeld on the banks of the Tay, on a rich alluvial sand with open channelly subsoil, sixteen Larch plants, the parents of the subsequent and famous crop which was sown on the same property. One of these original Blair Athole Larches furnished the timber for the great planter's coffin. The height of this tree was 106 ft. Three of the five Dunkeld lawn trees were also felled, and two of these which were cut down in 1809 contained, at the age of seventy-one years, 147 cubic ft. and 168 cubic ft. respectively; and the last-mentioned was sold in Leith to a company of ship-builders for 3s. per ft., or £25 4s. the tree. Baltic timber at that time was selling at war prices. The two other original Larches on the lawn still stand close to the ancient cathedral of Dunkeld, and not far from a fine group of their own offspring. They are still sound timber at 138 years old, though their period of growth had been reached some years since. The largest tree measures 98 ft. 10 in. in height, and 14 ft. 6 in. in girth at 5 ft. from the ground. The trunk is perfect in shape, tapering gradually and regularly, until it ceases to be measurable timber at about 20 ft. from the top. It is said to contain 423 cubic ft. of timber. These two companion trees are 11 yards apart, and their branches meet and interlace without injury. From this history of two Larches, which probably attained their growth at about one hundred years, we learn much in reference to the quantity of timber which may be produced on good light land with natural drainage. To continue our general history. It was by no means easy to obtain Larch plants. The sixteen just noticed were brought from London by Mr. Menzies of Migeny, who presented them to the Duke. Others were obtained by the same Duke James, who planted, in all, 1941. John, Duke of Athole, who scceeded in 1764, obtained about 1,000 plants yearly from the cones of the first planted trees upon the lawn, and added in ten years 11,400 young Larches to the growing crop. His successor, John the Planter, soon became a Larch lover and an enthusiast, but previous to determining on the general planting of his estate, he felled some of the original Larches, aged forty or fifty years, and tested their value. In a short time the Athole frigate, and a small fleet of merchant ships built of Larch timber, were afloat, and to his intense delight, he soon discovered that the timber of the new Fir from the Tyrol was equal, and in some respects superior, to that of the ancient Pine of Scotland. The greatest efforts in planting were made during the years 1816 to 1818, when 5,922,000 Larches were planted, and from 1824 to 1826, when 4,038,880 were added. The great improver died in 1830, having planted 12,974,380 Larches without mixture, and 1,122,339 Larches in mixed plantations. The following abstract account of the Duke of Athole's woods and forests was drawn up in 1829 :

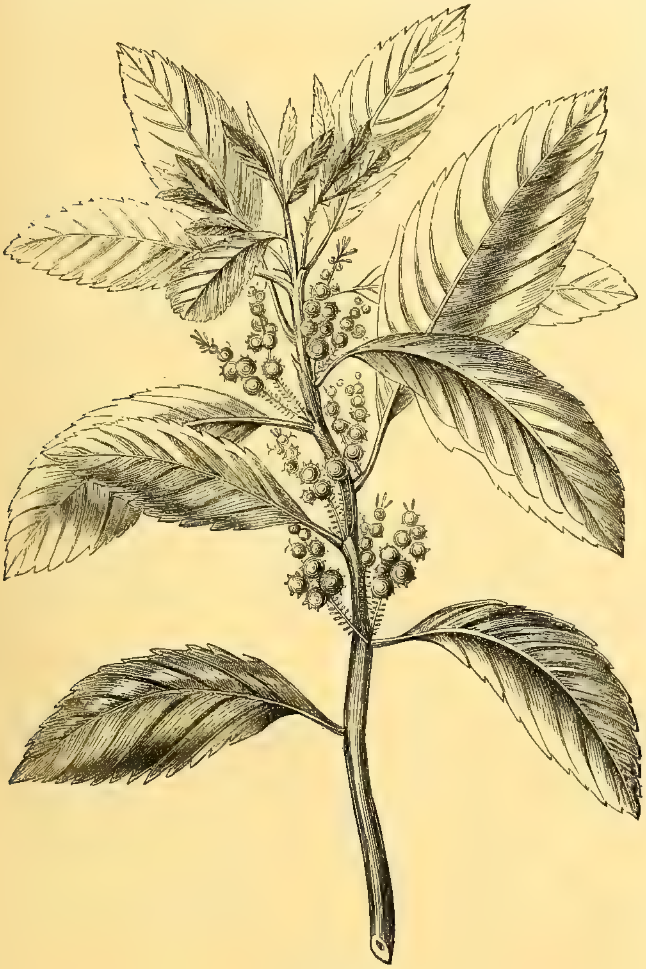
	Statute Acres.		Statute Acres.
Oak	1,337	Scotch	435
Larch	10,755	Mixed	3,665
Spruce Fir	470	Birch	30

On the Duke's accession in 1774 the total number of acres planted was about 1,250, consequently the area planted by him was 15,473 statute acres; and allowing 2,500 plants to each acre, the total number of trees planted was 24,756,000. In reality the number was considerably greater, and if ten per cent be allowed for making good the failures of plants, the total number of trees planted would be 27,231,600.

GALEWORTS.

To the genus Myrica, our collections of hardy trees and shrubs are not much indebted. All the species are more fitted for the botanic garden than for the decoration of the park or pleasure ground. They are widely spread over the temperate regions of both hemispheres; in North America, at the Cape of Good Hope, in Northern India, China and Japan. Some are eminently social, for example, our British Bog Myrtle or Sweet Gale, which in North-west Europe covers enormous tracts of bog country; indeed, none are found naturally, except on the banks of rivers and innundated spots. This points to the bog garden as the place where they would be of the most use and where they would best succeed; M. Gale is the badge of the Campbells. The leaves are bitter, but have a Myrtle-like fragrance, whence one of its common names. Formerly northern nations used this bush as we now use our Hops and in a few places in the Highlands of Scotland and elsewhere that usage still lingers. M. cerifera, the Bayberry or Wax Myrtle, is a shrub or small tree growing near the sea-coast of the Eastern United States. Its berries are coated with a waxy secretion, which was once largely used in the domestic manufacture of candles. A good series of specimens may be seen in a case near the door of the No. 1

Museum at Kew. The Californian Bayberry, M. californica, sometimes attains a height of 40 ft., with a trunk 2 ft. in diameter. M. arguta, of which we give a representation, was discovered in New Granada by Humboldt and Bonpland, and is described and figured in their "Nova Genera et Species Plantarum." It has rather straggling branches, with thickish rugose, oblong-lanceolate, stalked leaves narrowed at the base, edges sharply toothed, glabrous underneath, pubescent above.



Myrica arguta.

The catkins are axillary, and are generally produced in threes, the male flowers occupying the lower, and the female the upper portion of the catkins. G.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Difficult Transplanting.—Doubtless the fame of the Birch-tree which, like Picciola's flower, by a freak of Nature took root on the top of St. Stephen's Tower, at Vienna, is familiar to our readers. By order of the Municipal Council of Vienna, this tree was transplanted from its native altitude to the Rath Haus Park; but the unfortunate tree could not thrive in this low region, and has just died.

Duration of Oak Under Water.—The alteration undergone by Oak wood which has remained a long time in water is remarkable. This was observed at Rouen in 1830, in the case of pieces of Oak from an old bridge build in 1150. M. Berthier reports in a chemical work that the wood was like ebony, and the modification was found due to the presence of peroxide of iron. Another case has just been recorded by M. Charrié-Marsaines. Having occasion in constructing a discharge sluice on the Rhine, to demolish an old military dam, built by Vauban in 1681, and based on a platform which consisted of Oak wood in a cubical block of 80 metres, he found this wood to have a dark colour, quite like that of ebony, and very great hardness, as was found on trying to cut it for re-employment in the new works. The wood then had been 146 years in a soil constantly soaked with water.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Lawns.—Should the present genial weather continue, it will, in conjunction with the more than usual amount of moisture contained in the soil, keep the Grass growing on vigorously later than ordinary; therefore, in order to preserve a neat appearance it should be kept mown, all fallen leaves should be swept up, and worm-casts removed by sweeping and rolling; the walks, too, should be kept free from weeds, and constantly rolled. Unless matters such as these are diligently carried out, the falling leaves and other indications of winter give the garden an unsightly appearance. Those who admire the beautiful tints of the leaves of deciduous shrubs and trees previous to their falling off, will do well to note what pleases them best, with the view of introducing them into their gardens now that the season for planting is at hand. Shrubberies and herbaceous borders should again be gone over with the hoe and rake, removing from the latter all dead flower-stems; for it should ever be borne in mind that it is not extent but faultless keeping that renders a garden enjoyable.

Carnations layered early should, as soon as sufficiently rooted, be taken off and potted; it is usual to put a pair of layers together in 5 in. pots, draining them efficiently, and using good soil moderately enriched; put each layer at opposite sides of the pot and press the soil firm, so as to allow half an inch space for water below the rim, and moisten them fairly as soon as potted. They should then be at once plunged in a frame in a bed of coal ashes, with 3 in. underneath them to exclude worms; the lights should be put on and kept rather close for a few days until the roots have begun to move, after which they ought to be drawn off so as to expose the plants fully—except in very wet weather—until there is an appearance of severe frost. This of course applies to the more tender varieties of Carnations and Picotees; the more robust-growing Clove kinds, where layered early enough to be now well rooted, may at once be taken off and planted either in nursery beds or where they are to flower; such as were layered later and have not got properly rooted had better remain undisturbed for some weeks yet, or until spring.

Pinks that were piped at the proper time will now be well rooted, and a bed should be prepared for them where they can be grown together, as although desirable plants for the front or second row of a herbaceous border, still to do them justice they ought to have a piece of ground to themselves in a good open situation away from trees or walls. Where the land is of a heavy damp, character it should be raised from 4 in. or 6 in. above the surrounding level by the addition of fresh soil; and even where it is dry enough to grow Pinks well they should, after the ground is well dug with a moderate quantity of manure added, have from 4 in. to 6 in. of new soil laid on the top, and pointed in with a little more manure. In this the pipings should be planted 6 in. or 8 in. apart in rows, with 10 in. or 12 in. spaces betwixt the rows. New soil like the above generally contains wireworms, and as these, from want of something else to eat, will prey upon the roots of the Pinks, they should be trapped by means of slices of raw Potatoes thrust into the ground at intervals of a foot or so apart; or sliced Turnips laid flat on the surface will answer the purpose; these traps should be looked over every other day or so for a few weeks, and the wireworms destroyed; the same precaution should be used in the case of Carnations, whether in pots or in the open ground. These plants deserve a place in even the smallest garden; they are in no way difficult to grow, and their flowers, which are produced in quantity over a considerable portion of the summer, last long when cut either in bouquets or vases.

Herbaceous Plants.—Fibrous-rooted spring and early summer-blooming herbaceous plants, that have become too large, may now be divided; by carrying out such work at this season when the tops are dead or nearly so, the plants will bloom much better than if it were done in spring. All should therefore be removed or divided that require it, except such plants as the common White Lily, which will now be making active growth, and if the roots be disturbed it will have the effect of wholly or partially preventing its flowering next year. The majority of herbaceous plants are an exhaustive crop; consequently the ground in which they have grown, and which they are again to occupy, should be well enriched by a liberal application of manure and deeply dug; this latter is essential where, as is often the case, the roots of shrubs or trees have access to it. Where any considerable number of the plants are thus to be got up, advantage should be taken of the opportunity to re-arrange such as may require it, not only by keeping the strongest-growing ones to the back, graduating regularly so as to have the lowest growers in front, but also mixing the colours in a way that will produce the best effect.

Bedding Calceolarias require treatment different from that given to other bedding subjects; their nature is such that the somewhat dry condition of the atmosphere necessary to keep the leaves of other plants generally used for bedding from damping through the winter would be fatal to the well-being of the Calceolarias; neither will they bear so much warmth as most plants; anything above actual frost, or even a few degrees of the latter will do them no harm. Cuttings of them also do not succeed if put in early in autumn, as they get too strong and vigorous before spring, the result of which is that they are much more likely to be attacked by the root disease, to which they are liable, than late-struck smaller plants, that require less room to keep on growing until the time for bedding them out in spring. I have generally found those put in about the middle of October to do the best; a small frame should be prepared for them, putting into it some fine, moderately-light, sandy soil, about 5 in. in thickness; if this rest on a solid bed of ashes, it will be all the better, as it will prevent the roots from extending downwards; put the cuttings in 3 in. apart, pressing the soil to them, so as to make them firm, and give them a good watering immediately afterwards; put on the lights at once, admitting a little air for a few hours in the day. Calceolarias are water-loving plants, and the soil must never, from the day on which the cuttings are put in till they are planted out in spring, be allowed to get into anything approaching a dry condition. They will very soon root, when more air may be given them; mats should always be in readiness to cover them when there is an appearance of sharp frost, for although a little frost will not injure them, yet if frozen before they get fairly rooted it might do harm. A good body of litter should be prepared to put round the frame in winter and to lay on the glass, in addition to mats, during the time of continued frost.

Kitchen Garden.—Weeds have had an unusually flourishing time of it this summer, and, where cleanly gardening is not carried out, will entail much labour in keeping them down, as where not destroyed by stirring the surface with the hoe as soon as they have vegetated, many get so strong that with the damp condition of the ground they are able to re-establish themselves even after being cut up several times.

Strawberry Ground should be kept clear of weeds, and all runners at the same time should be cut away; but by no means remove any portion of the leaves whilst there is the least vitality in them, as is often done under the impression that it assists the crowns to plump up and ripen; than this no greater mistake can be made, as every leaf that is removed whilst it has any life in it has a weakening influence upon the bearing capabilities of the plants for another year. Should the weather keep dry the whole of the ground ought to be well hoed, letting it lie undisturbed for a few days; then give it another stir with the rake; if this be repeated two or three times the earth that has been removed in hoeing will part from the weeds, and they can be cleared off without the removal of any soil with them. In land of a medium character this can easily be done, but where it is extremely retentive, and of a clay-like nature (such as Strawberries succeed best in), it is so adhesive that it is a difficult matter after a wet season to get the weeds off without a good deal of soil adhering to them; in land like this it may be necessary to bury the weeds by shallow digging; this will be especially the case where a good deal of Grass has sprung up, which amongst Strawberries much more troublesome and difficult to kill than ordinary summer weeds.

Raspberry, Gooseberry, and Currant quarters should be similarly treated; it frequently happens that a few summer weeds are taken little notice of at this season of the year, under the impression that it is too late for them to do much harm; yet this is by no means the case, as they are native plants of a most persistent character that will go on flowering and producing seeds up to the end of the year, and a little inattention to them often entails a great deal of after labour. All ground occupied by winter Onions, Carrots, Lettuce, Endive, Coleworts, Cabbage, and Leeks, should have the surface hoed, taking advantage of dry weather for the purpose.

Latest Apples and Pears should be gathered as they become fit for use. Most kinds have this year kept on growing later than usual for two reasons—first, on account of the very late spring retarding the commencement of their growth; and, secondly, through the effects of the damp summer keeping the foliage much clearer than ordinary from the attacks of red spider, the result of which is that the leaves are retaining their vitality much longer than they generally do, which to a great extent prolongs the growing season of the fruit. It is not well to let these fruits remain on the trees after they are in a fit condition for gathering, for should strong winds occur part of them will be shaken off; yet it is better to lose some in this way than to gather too soon, especially in the case of late-keeping kinds, which are sure to shrivel if removed from the trees before they are quite ready to store.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

October 15.—Sowing Mustard and Cress. Putting in the last of the Calceolaria cuttings. Tying up Lettuce, and covering up Endive to blanch. Turning manure for Mushrooms. Getting manure and leaves together for making hotbeds. Gathering the last of the Tomatoes, and hanging them up in Pine stove to ripen: gathering also Glou Morçeau and Knight's Monarch Pears.

Oct. 16.—Potting Echeverias; also old plants of Tom Thumb and Indian Yellow Pelargoniums. Thinning out Mignonette in pots. Salting all the flint gravel walks. Looking over Cauliflowers, and turning down leaves where required to protect the heads from frost. Hoeing among all late planted Cabbage, Endive, and Lettuce. Stacking away Carrots and Beetroot. Collecting leaves, cleaning walks, watering Pines, and tying them where required.

Oct. 17.—Sowing Canadian Wonder French Beans. Looking over cuttings, taking off the tops where required, and removing dead leaves. Earthing up Celery when the soil is dry and in workable condition. Cutting back the heads of Yews, Laurels, and other shrubs where beginning to overhang each other. Gathering Easter Pippin and Lamb Abbey Pearmain Apples.

Oct. 18.—Putting in cuttings of Pentstemons and Antirrhinums. Clearing off flower borders, and getting them ready for spring-flowering plants. Filling up all pits and frames as they become empty with Lettuce and Endive. Making another Mushroom-bed. Gathering last of Vegetable Marrows and clearing away the plants.

Oct. 19.—Potting various kinds of Pelargoniums. Planting spring-flowering plants of the following sorts, viz., Red and Yellow Wallflowers, Red and White Daisies, Iberis, Myosotis, Alyssum saxatile, Pansies, Nemophila, Saponaria, and Silenes. Fumigating Cucumbers. Clearing off late Peas and stacking the best of the sticks for another year. Gathering Uvedale's St. Germain and Catillac Pears.

Oct. 20.—Potting Hyacinths, Narcissi, and Tulips. Getting cuttings of some of the tenderest plants into warm quarters. Looking over Grapes in bottles, and putting more water in such as require it. Putting haybands round Cardoons, and earthing them up. Cleaning up pleasure grounds and rolling walks where required. Fruit in use for dessert—Pines, Grapes, Pears, Apples, and Nuts.

Rats and Climbers.—I reside in a house which once formed part of a great abbey, and is now included in the precincts or close of a renowned cathedral. Its venerable walls are clothed, and greatly adorned, by a luxuriant growth of clustering Roses, of Ivy, and of white Jasmine and Clematis, the two latter now in charming perfection, the admiration of all beholders. The Clematis, especially, regales our eyes by its wealth of blossoms immediately beneath the sill of our drawing-room window, on the first floor of the house, some 15 ft. above the level of the garden below. That birds, bees, and butterflies should hover around the creepers, and share our enjoyment of their beauty, is quite according to the best precedents, and has our full acquiescence and approval. If a few earwigs extend their walks beyond the leafy shelter, we know how to pardon such indiscretions. But we are not superior to old-fashioned prejudices against mischievous vermin of a much more formidable kind; and you may imagine our surprise, when at tea yesterday evening, to have ocular proof that rats avail themselves of our climbing plants for the purpose of invading our upper decks, and that they use them as sailors use the shrouds of their ships; in short, that the boughs and tendrils of our creepers are converted into rat-lines! The tranquility of teatime might well be interrupted when a whiskered Rodent appeared at the window, tried it with his clever paws, and, finding it closed, retired with a discomfited air! Must we really cut away our charming Clematis? Can we by no sacrifice less harrowing to our best affections place ourselves beyond the reach of renewed attacks by unscrupulous and crafty invaders.—"Science Gossip."

A New Beverage.—Mr. O'Conor, of the British Legation in Brazil, calls attention, in a recent official report, to Sterva-maté, an article largely cultivated in the Province of Parana, and exported to neighbouring South American countries, but hitherto not on the list of exports to European markets, though it would, he has no doubt, be very acceptable, as it is pronounced by those who have tried it a capital substitute for our far more expensive, and too often adulterated, tea and coffee. He says it is more fortifying and alimentary and and much more wholesome, and can be sold at a price so moderate as to place it within the reach of all classes. He states that the Minister of Agriculture has appropriated a small sum for the purpose of making this excellent plant known in Europe.

Emerald Green is the proper English name for the "Paris Green," now so much spoken of in connection with the destruction of insects.

FARMERS' KITCHEN GARDENS.

A few farmers have provided themselves with an excellent supply of garden vegetables the whole year round; there are others who likewise obtain a good supply, but at much greater cost; a third class who have a poor and expensive supply; and a fourth, who have no kitchen garden at all. It is to the practice of the first mentioned class that we will now allude. The most successful farmers are those who practise to a certain extent what is called "high farming." Those who raise garden vegetables, procure them most cheaply and of best quality, when they pursue this kind of management—namely, with rich soil, clean culture, and with labour-saving appliances. Many have weedy gardens, because they depend on doing the work by hand. They have thus gone into business beyond their ability to manage, by providing a large garden, which they could not properly till. It would have been better to have confined their operations to a single square rod, and given it the highest manuring and tillage, than to have attempted to take care of half an acre by means of the spade and hoe, and raised half a ton of weeds, and a multitude of seeds instead. We have repeatedly urged on those who are compelled to practise economy, to plan their gardens so as to be cultivated with a horse. If they do so, and manage aright, they may accomplish all they desire at one-tenth the cost of working by hand, and this saving in many cases is the turning point between utter failure on one hand and an abundant supply on the other. Farmers put off planning and laying out their vegetable gardens till spring. This is the first mistake they make. They should begin in autumn. This will enable them to accomplish two very important objects, namely, to apply manure copiously and repeatedly before and during winter, so essential to success in raising vegetables, and to work the soil over and over with plough and harrow during autumn in intermixing this manure; but more important, to clear out and kill every vestige of weeds by this easy and cheap process, and thus save a vast amount of thumb-and-finger labour next season. The old-fashioned way was to lay out the garden with alleys, blocks, and squares, in which shape it was impossible to use a horse, but all must be worked by hand. Fig. 1 represents this mode in a simple shape, fig. 2 somewhat more complex, and fig. 3 is a large and complete kitchen garden, occupying about an acre, and requiring at least the constant labour of one man to plant and keep it in order. Laid out and planted in the way we propose, a small portion of one man's labour would do all the work, and it would be better done, and the crops would be better, because the owner could afford to pass over the ground oftener with his one-horse harrow or plough, or cultivator, and to keep the surface more constantly mellow and free from weeds. He could, of course, if he elect to do so, allow it to grow up with weeds, in precisely the same way that some slipshod cultivators treat their cornfields. The small plan, fig. 4, will show sufficiently how this laying out is done. Everything is in rows or drills, or in double drills; and there may be a few rows of Currant bushes extending parallel with the drills, or these may be consigned to the separate fruit garden. Small vegetables, such as Lettuces, Radishes, &c., may have a special department allotted to them, as may be convenient; but all crops of any considerable size such as Turnips, Cabbages, Beets, Parsnips, Peas, Beans, &c., should be placed in straight, even drills, and receive horse culture. The rule should be never to allow a weed to grow, and this will not only be better for the crops, but considerably more economical than to fight them when well up. In order to effect this result, make it a rule to go over every piece of ground once a week, even if it be perfectly clean on the surface. This will kill any weeds that may be getting ready to come up. Do all that is possible in this way with the horse, and the rest with a steel rake. It may do to occupy a part of the ground with small fruits, such as Currants, Gooseberries, Raspberries, &c., but it would be better to give these a separate piece of ground, where they will not interfere with manuring or other operations. Such a fruit garden is represented by fig. 5, which clearly explains itself, and which is cultivated in the same easy way.—"American Cultivator."

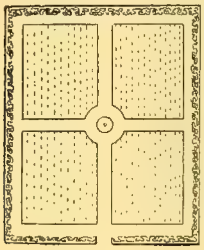


Fig. 1.

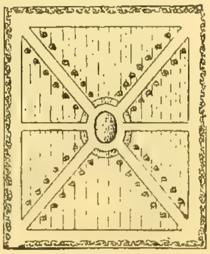


Fig. 2.

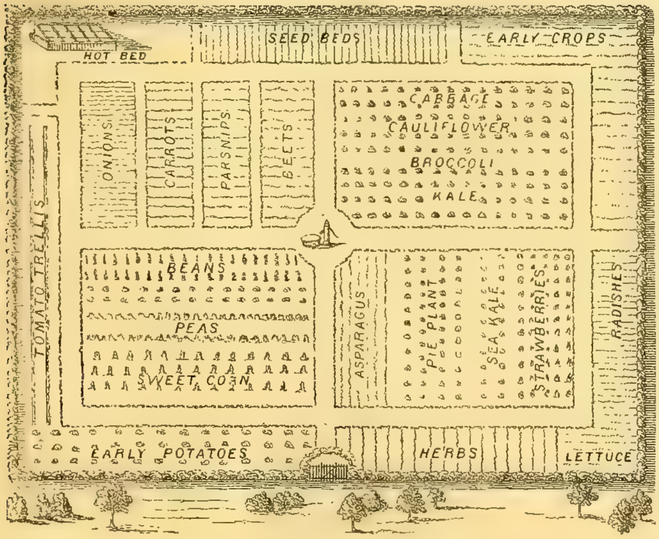


Fig. 3.

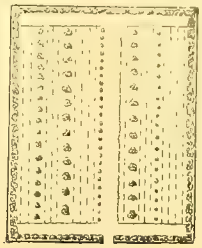


Fig. 4.

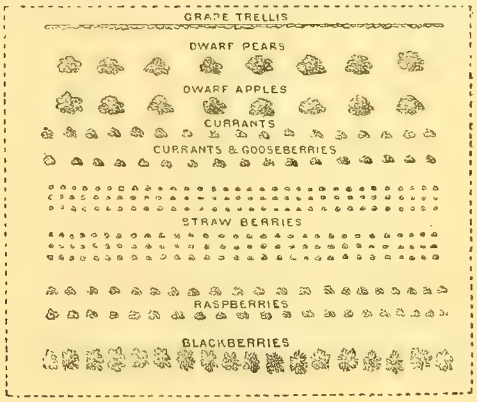


Fig. 5.

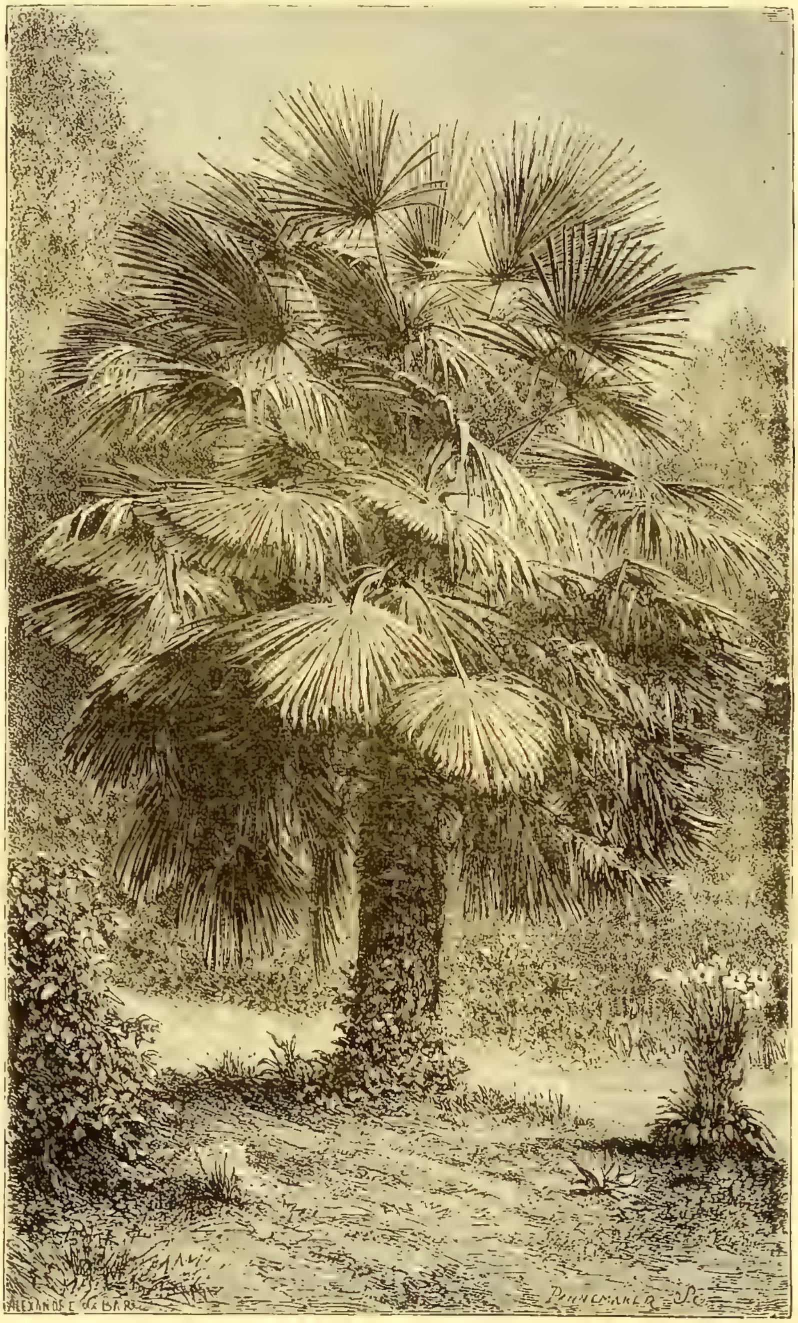
Potatoes on Newly Broken up Land.—In ordinary garden and cultivated land where rich manures have been applied, the Potato disease has been very destructive this season; the only exceptions being comparately high, dry situations where the soil is comparatively light, poor, and well drained, and which in seasons of drought are scarcely worth cultivating. We have also, in freshly trenched old woodland ground, where manure has never been known to be applied, an almost total immunity from disease; but of course the bulk of the crop is not equal to that of early kinds grown under more favourable circumstances. Experience, however, shows that high culture must be confined to early varieties only; late kinds, to which we look for our winter supply, will be more profitably grown on restrictive principles, as a medium crop of sound tubers is better than a bulky crop of decayed ones.—J. Groom, *Henham.*

Mushrooms in Coal-pits.—The experiment has been tried at Borsigwerk, in Upper Silesia, of growing Mushrooms in a coal-pit at a depth of 126 mètres below the surface of the earth. It has proved entirely successful, the fungus growing rapidly and plentifully in an averagetemperature of 8° (R.) The Mushrooms thus grown are said to be of finer flavour than those developed in the open air, and are at present commanding a proportionately higher and very remunerative price in the local market.

CHAMÆROPS EXCELSA IN A CORNISH GARDEN.

The accompanying engraving of this Palm is from a photograph taken in the beautiful grounds belonging to Lamorran Rectory, Probus, the residence of the Hon. and Rev. J. T. Boscawen. It was planted by Mr. Boscawen in the spring of 1853, and has now attained a height of 16 ft. 6 in., the stem 6 ft. from the ground measuring 3 ft. 6 in. in circumference. It is a female plant, and has for several years flowered freely and produced well-developed fruits. In another part of the grounds is a male plant of the same species, about 10 ft. high, equally well furnished; both are in perfect health and luxuriance. There is no doubt whatever that this Palm is perfectly hardy, Mr. Boscawen's plants having passed through the severe ordeal of the winters of 1856 and 1860-61, when the thermometer fell below zero on two occasions, although planted but a few feet above the level of a lake which skirts the base of the grounds. The chief source of success is doubtless due here to the carefully-selected, well-sheltered situation, and fertile, well-drained soil in which they grow. Within a few yards of the Palms are some grand specimens of Pinus insignis, planted a year or two before them, and although cut down to the ground by frost in 1856, they threw up new shoots from the base, and are now about 80 ft. high, producing cones and seeds in abundance, from which young plants are springing through the turf. In close proximity to the Palms is a very fine example of Saxe-Gothæa conspicua, well-furnished, and about 10 ft. high; on the opposite side is an equally fine specimen of the Huon Pine (Dacrydium Franklini), 8 ft. high. But to attempt to enumerate the many rare and beautiful plants brought together here by Mr. Boscawen would occupy too much space. I will merely add that by a careful and wise selection of soils and situations suitable for each individual subject, a much more important object has been obtained than that of simply gathering together a host of subjects, however good.

Hortulanus.



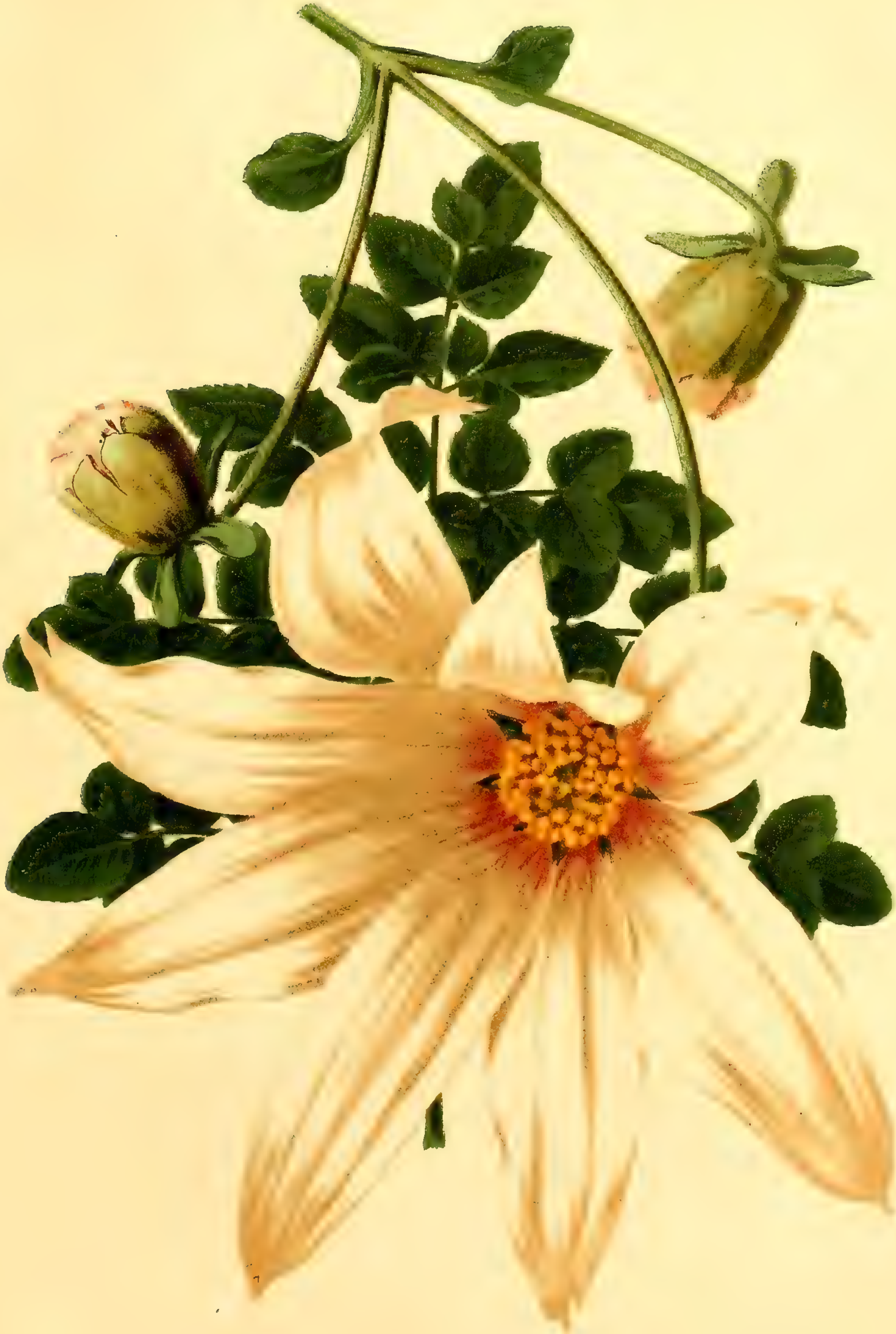
Chamærops excelsa in a Cornish Garden.

PLATE XCV.

THE SPECIES OF DAHLIA, AND THE EARLY HISTORY OF GARDEN VARIETIES.

(WITH A COLOURED FIGURE OF D. IMPERIALIS).

The genus Dahlia consists of not more than half-a-dozen well marked species, all of which are natives of the mountains of Mexico, at an elevation of between 4500 to 10,000 ft. above the level of the sea. Early in the period during which Mexico was under the sway of Spain, a certain Dr. Hernandez wrote a big book on the natural history of the country, which is illustrated by a large number of figures of animals and plants, among them two varieties of Dahlia. At that time botany, as we now understand it, did not exist, and the study of plants was almost limited to determining whether they were "hot in third or fourth degree," and endowing them with healing properties, depending not upon their actual tried virtues but upon some external characters. Under the name of Acocotli, Hernandez figures these Dahlias, and descants at some length on their medicinal virtues. It was not till towards the end of Spanish ascendency that Dahlias were introduced into Europe, and it was by way of Spain that they reached this country. The genus Dahlia was founded by Cavanilles, a Spanish botanist, in honour of Dahl, a Swedish botanist, on a plant of D. variabilis, which flowered in the botanic garden at Madrid, in October 1789; and he published it with a figure, under the name of D. pinnata, in the first volume of his "Icones Plantarum," &c., a fine folio work of seven volumes, containing figures and descriptions of a large number of plants which flowered in the botanic garden at Madrid. This was in 1791, and in a subsequent volume Cavanilles figured two other forms under the names of D. rosea and D. coccinea. D. rosea and D. pinnata turned out to be varieties of a very variable species, to which the name D. variabilis was subsequently applied. Humboldt introduced fresh seed to the Continent in 1804,



THE NOBLE DAHLIA (D. IMPERIALIS).

possibly of different varieties, as several were cultivated in Mexico.

Introduction into England.—It is recorded in English books that the Marchioness of Bute introduced D. variabilis into this country in 1789, and after some research I have been able to prove that she sent or brought seeds of it from Madrid. Whatever the fate was of the first plants raised in England, it was not from this stock that Dahlias became dispersed over the country. In 1802, roots of the Dahlias named above were sent from Madrid to Paris where they flowered in course of time; and in 1804 coloured figures of all three of them appeared in the "Annales du Museum," probably the first coloured figures of Dahlias ever published. The coloration of the plates is not good; D. coccinea being of a dull red, though described as orange red; and D. rosea is represented of a lilac hue. Possibly the colours have faded, for D. pinnata is of a fine rich purple, and has semi-double flowers. Mr. Thouin, the author of the letterpress, writes very enthusiastically about them, and predicted that at some future time they would embellish our gardens in the summer. Leaving foreign literature alone, I will now give a sketch of the early history of Dahlias in England.

Flowering in England.—The first coloured plate of a Dahlia published in England appeared in Andrews' "Botanists' Repository" in November, 1804—the same year, it will be remembered, as the figures alluded to above were published in France. This is a large, single, bright purplish-red variety of D. variabilis, which was raised, it is stated, from seeds sent from Madrid the previous spring by Lady Holland, flowering in September and October of the same year in her ladyship's collection in the open air at Holland House, Kensington. It grew, we are told, to the stately height of 8 ft., with a circumference of 3 ft., and made a truly "specious" appearance. The notice of the plant concludes with the prediction that "there are considerable reasons for thinking that the Dahlia will hereafter be raised with double flowers." In 1805, Salisbury figured a pink single-flowered variety in his "Paradisus Londinensis," t. 16, the flower-heads of which are about 4 in. across, and have eight broad, flat ray-florets which meet at the margins, giving them the general aspect of the flowers of Anemone japonica. This was from the same collection as Andrews' plant, the librarian, Mr. Buonaiuti, having raised several varieties. On account of some objection to the original name, Salisbury undertook to give it "a more appropriate one," and called it D. sambucifolia. The first coloured figure of D. coccinea in an English publication is in the "Botanical Magazine," t. 762, from a drawing taken of a plant in Mr. Fraser's nursery at Sloane Square, in June, 1803. Fraser received it from France. Now that we have fixed the dates of introduction of the two original species, it may be desirable to state that D. coccinea is the same as D. frustranea of many books, and D. superflua is a synonym of D. variabilis. The reasons for giving these names, and the characters they apply to, are noticed under the brief descriptions of the species which follow.

Parentage of Double Dahlias.—There seems to be no doubt that D. variabilis or superflua is the principal parent of all the races of garden varieties of Dahlia in cultivation; and it is possible that it is the sole parent. It is asserted somewhere that D. coccinea will not intercross with D. variabilis, and if this be so all the varieties raised before 1840, at least, would be descendants of the latter. Such a wide range of variation is, moreover, not without a parallel in the China Aster. Whether D. scapigera or any other species was subsequently utilised in intercrossing I have found no positive evidence. The next phase in the history of the Dahlia in England I gather from an article by Salisbury in the first volume of the "Transactions of the Horticultural Society of London." It may be mentioned in passing that the Society was founded in 1805, though not incorporated by royal charter until 1809. The article in question was read in 1808, but not published until 1812; and among other matter new names are proposed for all the forms then existing in gardens and regarded as species. It would be waste of time and space to reproduce those names, but the substance of the article is worth reproducing.

Original Dahlias very Tall.—Salisbury obtained seed from the Holland House strain, which he sowed in May, 1806; and several of the seedlings flowered in October of the same year. One of these, which had obtained the height of 12 ft., did not open its first flowers until the 29th of October, but it produced a plentiful succession of bloom in the open air until the beginning of December. He does not enter into particulars respecting the variations in colour exhibited by this batch of seedlings but he mentions a yellow variety. He also states that Mr. E. J. A. Woodford introduced a variety from Paris, which flowered in his garden at Vauxhall in 1803, which would be anterior to Lady Holland's introduction.

Improved Varieties first Raised on the Continent.—In spite of the anticipations and predictions of writers and cultivators, little advance was made in raising improved varieties in England for some years, though a great number of varieties had been raised on the Continent, both in France and Germany, prior to 1814, as may be gathered from contemporary literature.

In 1818 Mr. J. Sabine, the secretary, read a paper before the Horticultural Society on the species and varieties of Dahlias, in the opening part of which he alludes to the splendour and richness of the varieties which surprised visitors to France after the conclusion of peace 1814. These varieties were soon imported, and previous to 1818 "splendid exhibitions of these flowers" had been held in London. In France, Count Lelieur began raising Dahlias from seed in 1808, and obtained purple, dark red, light red, yellow, and white varieties; and Otto, of the Berlin botanic garden, raised a great many fine varieties between 1813 and 1817. Even after the introduction of the Continental varieties, some years elapsed before any English raisers of note appeared on the scene. But about 1820, or perhaps earlier, the Horticultural Society began to form a collection of foreign and English varieties. Some two or three years after this date the late Sir Joseph Paxton, then an under gardener at Chiswick, was instructed to draw up descriptions and report upon the best varieties in the collection, but, leaving shortly afterwards, he never completed the task. This devolved upon William Smith, who acquitted himself well, as the report in the "Transactions" testifies; Smith's report was read in 1826, though not published until 1830. Before gleaning from that, let us take a glance at the class of flowers portrayed in the various periodicals of the period from 1815 to 1830. In the "Botanical Magazine," t. 1885 (1817), is a figure of a double variety called rubra, very pretty, but nothing very remarkable; and in the first volume of the "Botanical Register," t. 55, a handsome single variety called punicea is figured. This has rich dark crimson ray-florets of great breadth and length, and would be regarded as a very showy border plant even now. From Maund's "Botanist," vol. iv. (1831-2) we get a good idea of the degree of excellence attained at that period, better indeed than from Smith's report, which is not illustrated; it seems, however, that many of the finest varieties in the Horticultural Society's collection were not generally cultivated.

Original Classification.—With a figure of a variety called Blood-red, Maund gives a list of twenty-five varieties, divided into two classes, namely, Anemone-flowered and Globe-flowered. In the former class the central or disk florets have lost the original yellow of the single varieties, and are of the same colour as those of the ray or circumference, but their transformation is only partial, and the ray-florets, though quilled, are still considerably longer. This variety is represented as only about 3 in. in diameter, but another of this class, named Painted Lady, is a little over 4 in. across. The latter is a very pretty variety, in which the florets are longitudinally striped with crimson on a rose or pink ground. Crimson Globe, a variety of the globe-flowered class, with heads about 3 in. across, is hemispherical, with all the florets similar in shape, the outer ones not perceptibly longer than the inner. In the letterpress is the following curious observation:—"It is thought by several cultivators, who have paid close attention to the growth of the double Dahlia, that some of those of good quality which were first introduced, are beginning to 'wear out.' At present we think this a matter of uncertainty," &c.

First English Raisers of Note.—Returning to Smith's report, we there find the first connected record of the varieties raised in this country. The Society's collection consisted of a number of Continental varieties, without raisers' names, obtained through M. Van Eeden, of Haarlem, and English varieties, with raisers' names, so that we have here a clue to first English raisers of superior varieties. The most noteworthy of the early English raisers was Mr. Joseph Wells, gardener to Mr. William Wells, Redleaf, near Tonbridge. He succeeded in raising a strain of dwarf varieties, embracing all the principal colours, and, on the evidence of Smith, they began flowering in June, when not 1 ft. high, and continued through the summer and autumn. This was no small achievement, considering that the principal fault of most of the varieties of that date was the great height they attained. Another gardener who turned his attention to the subject at that period was David Douglas, then in the service of Lady Grantham, at Putney Hill. His name stands as the raiser of several of the best of the selected fifty given by Smith; and Miller and Middleton are the names of raisers of one or two other varieties each. Dahlia growing soon established a permanent footing, and we find the statement in Knowle's & Westcott's "Botanical Cabinet" of 1840, that a catalogue of some 1500 Dahlias had been published some years previously. It would be tedious to go through the more recent history of Dahlias; furthermore, this is very well known to those interested in it, and several of the most eminent raisers are still among us. Another thing, Dahlias are no longer fashionable, a fact not much to be regretted, perhaps, because they are now more likely to be grown for their real merits alone; and florists who make them their speciality are careful to offer a small but very select assortment only. The Pompone or Bouquet Dahlias, a class of comparatively recent acquisition, deserve special mention, because they are very useful for decoration at a season when flowers are getting scarce out-of-doors. There are varieties of almost all the shades of colour known among the "show" varieties, and there is now a race of dwarf Pompones. Formerly Dahlias were called Georginas in this country, and they still bear that name in Germany. All single-flowered Dahlias, with the exception of those half-reversions from double varieties one generally sees, are showy border plants, and some of the forms described below are exceedingly elegant and beautiful.

Imperial Dahlia (D. imperialis, Roezl).—At first sight one would not recognise this plant as a Dahlia, it is so unlike in external character anything we are accustomed to associate with that name; but a closer inspection, and a comparison with the single-flowered varieties especially, will reveal many important characters in common. It has tuberous roots, very large, tri-pinnately divided leaves, and a solid stem swollen at the nodes, growing to a great height for a herbaceous plant, and terminating in a large, loosely-branched panicle of flower-heads. The entire plant reaches a height of 10 ft., 15 ft., or even 20 ft. occasionally; usually with a single stem, which becomes naked as the lower leaves successively fall. This mode of growth renders it unfit for a small conservatory, and it does not appear to thrive so well in the open air as to make it a general favourite. Mr. Salter succeeded in dwarfing it by grafting shoots in the tubers of a Liliputian Dahlia, but his example does not seem to have been much followed; in fact, although a majestic and showy plant that has been in this country seven or eight years, and on the Continent nearly fifteen years, it has made little way. If somebody were to take it in hand, and succeed in raising a dwarf strain, there is no doubt that it would meet with general favour. And there seems to be no reason why dwarf varieties should be unattainable, seeing what has been done with Dahlia variabilis. The bell-shaped flower-heads are pendant, however, and therefore their beauty would be lost to a great extent in quite dwarf varieties. It is a magnificent plant when growing in a lofty house with plenty of room for development; but, as far as my knowledge goes, it does not flower freely in the open air, and I cannot say that it has been fairly tried. Roezl discovered and introduced it some fifteen years ago, but I have not been able to ascertain at what altitude it grows in its native country. As may be seen, it is not the tallest of its genus, nor the tallest ever cultivated in our gardens. Our plate of this fine species was executed from M. Riocreux's original drawing for the "Revue Horticole," from the proprietors of which we purchased it.

Tree Dahlia (D. excelsa, Bentham, Maund's "Botanist" t. 88).—This is the largest-growing species of the genus, considerably overtopping the tallest specimens of D. imperialis. It is recorded that it was first introduced into this country accidentally with some other plants consigned to Messrs. Loddiges in 1830. Perceiving hat some thick stakes which were used to protect a basket of plants received from Mexico, showed signs of life, they were planted in the open ground, where they grew the first season to a height of 10 ft., but were destroyed in the subsequent winter. The plant was again imported, both by roots and cuttings, in 1834, by Mr. William Bates, who distributed it among his friends, and sent plants to the Liverpool Botanic Gardens. There are specimens in Kew Herbarium labelled—"Tree Dahlia or Gigantic Dahlia, collected in the valley of Mexico by W. Bates, Esq., 1834. It forms a shrub 30 ft. high, covered with double or single purple flowers." The plant figured in the "Botanist" was grown in the garden of Mr. G. Ellins, of Rigby, Hall, Worcestershire. Planted out in the border of a conservatory in the spring of 1837, it had attained a height of 12 ft. in November of the same year, with a single stem, terminating in a spreading crown of exceedingly attractive flowers. But the plant has not invariably a simple stem, and a specimen in the Liverpool Botanic Garden grew to a height of upwards of 20 ft. without producing flowers. The pale purple flower-heads of this species, as depicted in the figure quoted, are not unlike those of some of the varieties of Chrysanthemum, in which the central florets remain tubular, and the ray-florets are distant and spreading, giving the flower-head a diameter of 4½ in. It does not appear to be in cultivation in this country now, but about the same time (1870) that D. imperialis began to be known in this country, Messrs. Huber and Co., of Hyères, South France, sent a coloured figure of what was supposed to be this species, which they cultivated under the name of D. arborea, to the "Gardeners' Chronicle," describing it as of compact habit, forming a large well-branched clump about 7 ft. high, with large dark green leaves, and producing its mauve-coloured flowers from the end of December onwards through the winter, in great abundance. A temperature below the freezing point does not, they state, interfere with the development of the flowers, which in form resemble those of a gigantic Anemone.

The following characters are taken from Mr. Bentham's detailed descriptions:—Roots fascicled, some cylindrical and fibrous, others swelling into tubers. Stem perennial, very thick, becoming woody, growing to the height of 20 ft. or more, less branched and assuming more the aspect of a tree than any other species, hollow inside, smooth and glaucous on the surface, marked with horizontal rings formed by the broad stem clasping base of the petioles, and sometimes emitting near the base a great quantity of fibrous roots. Leaves opposite, attaining a length of 2½ ft. by about 2 ft. in breadth, bipinnately divided; leaflets ovate or heart-shaped, toothed, nearly smooth or with a few scattered hairs of a pale glaucous green. Flower-heads on long naked peduncles, collected in corymbs of five to eight at the ends of the branches. The variety here figured is not unlike the formerly so-called Anemone-flowered varieties of D. variabilis, but there are specimens at Kew with double flowers.

Dwarf Dahlia (D. scapigera, Link and Otto).—A very beautiful dwarf species, with procumbent or trailing glabrous stems, throwing up erect-flowering branches, 1 ft. to 2 ft. high, each branch bearing one pair of leaves, from between which proceed one to three flower-heads, borne on long, slender stalks, or sometimes taller and again branched. Leaves pinnate, 4 in. to 8 in. long, borne on slender petioles. Flower-heads about 2 in. in diameter; ray-florets flat, white, meeting or overlapping each other at the margins; disk-florets yellow. This attractive dwarf perennial Dahlia is doubtless the hardiest of the genus, and certainly one of the most desirable. It grows up to an elevation of 10,000 ft. on the Peak of Orizaba, and is found in various other parts of Mexico. Whether this has had any share in the parentage of the Pompone varieties of Dahlia I am not able to say, but I should think it not improbable. Although the flower-heads are white in all the figures and fresh specimens I have seen, it appears to be variable in this respect, for there are wild specimens in the Herbarium at Kew in which they are red. First cultivated in this country in 1838, in the garden of the Birmingham Horticultural Society, whither it was sent from Berlin. It is figured in Maund's "Botanist," iv., t. 161, and in Knowles & Westcott's "Floral Cabinet," t. 118.

Scarlet Dahlia (D. coccinea, Cavanilles, Bot. Mag., t. 762).—The history of the importation of this species at the beginning of the present century is given in the introductory sketch, and little remains to be said of it here beyond the fact that it is a very ornamental plant, and would please many persons more than the florists' varieties of D. variabilis. It is of more slender habit than the species just named, and differs in having glaucous stems, and no trace of female organs in the florets of the ray; hence the proposed specific name of frustranea. Usually it has brilliant scarlet flowers, but there is a yellow variety, and possibly other colours sometimes appear. It is asserted that this will not intercross with D. variabilis, and that it differs from it in the tubercles being united to the base of the stem by short strings or fibres; but I cannot accept either of these statements without further proof, because I have my suspicions that there is evidence of its parentage in some of the florists' varieties. The flower-heads are usually from 2 in. to 2½ in. in diameter, and therefore smaller than those of the single varieties of D. variabilis. It grows from 4 ft. to 6 ft. high, and inhabits the intermediate regions of the mountains of Mexico.

Cervante's Dahlia (D. (Georgina) Cervantesi, Sweet's "British Flower Garden," series 2, t. 22).—A showy species, closely allied to D. coccinea, but having solid, not glaucous, stems, and the leaflets are remarkable for their very deep sharp teeth. The flower heads are about 2 in. in diameter, the ray-florets crimson, and the disk yellow. Sweet had his figure prepared in 1838 from plants in the Fulham Nursery of Messrs. Brames, Whitley, and Milne, who received seeds of it from Madrid, whither it had been sent by Cervantes from Mexico. An erect-growing plant, 6 ft. to 10 ft. high, readily distinguished, Sweet states, by its numerous slender branches. He also mentions a double-flowered variety of the present species; possibly only an extreme variety of the next.

Variable Dahlia (D. variabilis, Cavanilles).—The supposed parent of most, if not all, the florists' varieties in cultivation; but I can say nothing positive on this point. Perhaps some of the raisers of Dahlias may be able to clear it up. The hollow stems of this are said not to be glaucous, and the florets of the ray of the single flowers are fertile, or at least furnished with a rudimentary pistil (hence the name, D. superflua); both characters of little value. Further particulars respecting this species are given in the introductory sketch.

Slender Dahlia (D. gracilis, Ortgies, "Gartenflora," 1876, t. 861).—A handsome single Dahlia, with brilliant orange-scarlet flowers, introduced by Roezl in 1873. After comparing the figure quoted and Mr. Ortgies' description with authentic specimens of D. Cervantesi, I am of opinion that it is the same species, differing only in the colour of its flowers, and perhaps the shape of the ray-florets.

Dickson's Dahlia (D. glabrata, Lindley, "Botanical Register," 1840, t. 29; D. Merki, Lehmann; D. Decaisneana, Verlot, "Revue Horticole," 1864, p. 31, with a coloured figure).—Besides the two synonyms quoted, this Dahlia is often cultivated in gardens under the name of repens, a name of which I have found no publication. One of the most distinct species of the genus in the winged rhachis of its smooth, shining, irregularly bipinnate leaves, and the narrow, linear, outer bracts of the involucre. It grows from 3 ft. to 4 ft. high, and Lindley says it differs from variabilis, &c., not only in its dwarf habit and perfect smoothness, but also in its roots, which have fangs slender and uniform in size, instead of being partly large and succulent and partly resembling fibres. The leaflets are deeply and irregularly distantly toothed, and the flower-heads about 2 in. in diameter, and the broad ray-florets overlap each other. In colour this species is almost as variable as D. variabilis, from white, pink, through various shades of lilac and purple. Treated as an annual, Lindley states this answers remarkably well, and it is much easier to raise it from seed than it is to save its roots; and this would apply to any of the single-flowered forms, except D. imperialis and excelsa. Seeds of it were obtained from Mexico by G. F. Dickson, who presented them to the Royal Horticultural Society, and the plant was cultivated at Chiswick as long ago as 1835. The plant figured under the name of Decaiseneana has deep lilac-purple flowers, and is reported to sometimes attain a height of 7 ft. or 8 ft.

Among other Dahlias figured or described may be mentioned D. pinnatifolia nana (Andrews' "Botanists' Repository," t. 483), a dwarf variety of D. variabilis raised in Lady Holland's garden in the beginning of the present century; it has rosy-pink, semi-double, loose flower-heads about 5 in. in diameter. D. Barkeriæ (Knowles and Westcott's "Floral Cabinet," t. 127) is a distinct Dahlia, with hairy foliage and lilac-rose flowers, possibly only a variety of D. variabilis; it was introduced direct from Mexico in 1837 by Mr. Barker, of Springfield, near Birmingham. Dahlia crinita, Thunberg, is Trichocladus crinitus, a South African shrub.

W. B. Hemsley.

Wood Pavements.—The report of the deputation, appointed as representatives of the Edinburgh authorities to investigate the utility of wood paving in streets, has been completed. The deputation met various surveyors of Vestries in London in which wood pavement had been laid, and afterwards examined the pavements, noting the several kinds which were in use, and the way in which they were lifted and relaid. The deputation heard the representatives of several paving companies, and obtained explanations from them as to the methods and materials employed. In that way nine surveyors were examined in London, one in Birmingham, and one in Leicester. In the course of the inquiry it was found that the general estimate given as to the duration of wood pavement was five years, while that of granite was set down at thirty years, during which time, however, the stones required to be once lifted, redressed, and relaid. The first cost of laying wood and granite was practically the same, but the expense of maintainance varied considerably. If well laid, granite pavement did not usually require anything to be expended upon it for several years, and the outlay was stated to the deputation to vary from ½d. to 1½d. per yard per annum. The wood pavement companies offered to maintain their work for fifteen years, the first three years free of charge, and the remaining period at prices ranging from 3d. to 1s. 1d. per yard. The deputation, while freely admitting that a street paved with wood is a luxury on account of its smoothness and the diminution of noise, point out that in their opinion these advantages are more than counterbalanced by its cost, and the annoyance occasioned by the necessity of frequently lifting it for renewal. The deputation found, generally, that wood pavements in conjunction with tramways were unsatisfactory. After mature deliberation, and as the result of their investigations, the deputation report that in their opinion Princes' Street, Edinburgh, should not be laid with wood nor with wood and granite in combination, but that it should be paved throughout with granite of the best quality, laid in the most approved manner. [The resolution is a wise one; several of the more important drawbacks, however, with reference to wood pavements are not mentioned in the above paragraph.]

PISTACIAS AND THEIR USES.

The common name of Turpentine trees, under which the species of Pistacia are usually known, is somewhat misleading, inasmuch as they have no relation whatever to the true Turpentine trees, or those which furnish the turpentine of commerce, which is produced by several species of Pinus, notably P. sylvestris in Europe and P. palustris in North America. From Pistacia Terebinthus, however, a tree growing in Southern Europe, Northern Africa, and in some parts of Asia, is obtained what is known as Chio or Cyprus turpentine. The plants vary considerably in height in different localities, ranging from a shrub to 20 ft. or 40 ft. or more. The resinous juice or turpentine is secreted in the bark, and is contained in special cells, similar to those in P. Lentiscus, and from which Gum Mastic is obtained. The turpentine is collected from incisions made in the stem and branches, as well as by spontaneous exudation; the quantity collected from a single tree is very small, the average yearly yield of a large tree amounting to 10 oz. or 11 oz. This peculiar turpentine is used chiefly in medicine; in British practice it is nearly obsolete, but in Greece its use is more general, not only as a medicine, but for flavouring cordials and wines. Pistacia vera, which is the plant represented in our figure (see p. 356), is the Pistachio-nut tree, and is said to have been originally a native of Western Asia, whence it was introduced to Italy at an early period, and is now cultivated there as well as in Sicily, south of France, Spain, &c. The tree grows to a height of from 15 ft. to 20 ft., and bears compound leaves composed of from three to five broadly-ovate leaflets; sometimes, however, they are reduced to one. The fruit is somewhat about the size of an Olive, with this difference in shape—that it is more pointed, slightly concave on one side and convex on the other, mostly about 1 in. long, and of a reddish, or crimson colour. The outside pulp is very thin, and within it is a Nut which encloses a greenish-blue kernel, which, when fresh, has a remarkably sweet and bland flavour. These seeds are largely consumed in Greece and Turkey, as well as in the south of Europe, either in the raw or dried state, or for use in ragouts, comfits, conserves, and various kinds of confectionery. Pistachio Nuts, though not very generally seen in this country, are not by any means uncommon; they can be obtained in London at the best Italian warehouses, and are consumed chiefly by foreigners. The species of Pistacia being diœcious, it is necessary in forming a plantation of P. vera to plant a proportionate quantity of both sexes to ensure the fertilization of the female flowers and the consequent formation of fruit. In Sicily, it is said to be the practice amongst Pistachio Nut cultivators, to gather the male blossoms and hang them on the female plants. Pistacia Lentiscus is the Lentisk or Mastic tree, an evergreen shrub or small tree, native of the Mediterranean shores from Syria to Spain, and found also in Portugal, Morocco, and the Canary Islands. In the island of Scio in the Greek Archipelago, a good deal of care and attention is devoted to the cultivation of this Mastic tree, for no other part of the world is considered so suitable for its profitable cultivation. In the northern part of this island Mastic is chiefly collected from incisions made in the bark of the stem and the principal branches. In these parts of the tree the resin ducts abound, so that a very slight fracture or incision is sufficient to cause the juice to flow. It is remarkable that the wood itself is entirely free from any such product. After puncturing the bark the resin flows freely, and hardens in small masses on the trunks; these pieces are carefully gathered and placed in baskets lined with clean paper. The ground beneath the trees is also kept not only clear but clean, so that all the fragments of gum that may happen to fall are not impaired by dirt. A large tree will yield from 8 lb. to 10 lb. of Mastic. The collecting is chiefly performed by women and children. The gum obtained from the branches by natural exudation is considered of the finest quality. Mastic is at the present time very little used in this country, either in medicine or for varnish making; a little is used in dentistry for stopping carious teeth. The best quality always finds its way to Constantinople, and a good quality Mastic is sent to Trieste, Vienna, and Marseilles, a small quantity only reaching this country. In the East it is employed not only for medicinal purposes, but for sweetening the breath by chewing, and also in the preparation of cordials. Of the three species here mentioned, P. Lentiscus is the most hardy; with some protection, or under the shelter of a wall, it will grow in this country; the other two species are too delicate for outdoor cultivation. With regard to P. vera the soil and climate most suitable for its cultivation may be considered as similar to those required for the Olive. It, however, is said to have grown well and to have borne fruit even so far north as Paris. J. R.

Fruit-bearing Branch of Pistachio Nut Tree.

Hardy Exotic Ferns.—During the last few years I have seen a good many schedules of horticultural and floricultural exhibitions; and it is rare, very rare indeed, that one finds in them classes for hardy exotic Ferns. I cannot understand why that should be so, are they not worth growing? or are they not worth exhibiting? There are Adiantums, Aspleniums, Cyrtomiums, Lastreas, and many others with which we are all acquainted, that are in my opinion not only well worth growing, but well worth exhibiting. As the schedule of the Royal Horticultural Society's Great Provincial Show, to be held at Preston next year, is now being formed, would it not be a fair chance for all to see what these Ferns would become, by having a class for twelve distinct kinds to be shown by nurserymen, and six distinct kinds to be shown by private growers? As a lover of hardy exotic Ferns I should like to see them becoming greater favourites, and better grown than they now are.—H. E.

The American after-dinner orator in England will soon be able to say, "Speaking the same language, glorifying in the same literature, of the same blood, and subject to the same Potato bug," &c.

EARTHWORMS, THEIR FOOD AND USES.

A recent number of the "Zeitschrift für Wissenschaftliche Zoologie contains an interesting paper, by Herr Von Hensen, descriptive of observations, made with true German minuteness of detail, of the habits of the common earthworm (Lumbricus communis), which forcibly illustrate the correctness of the views put forward by Darwin forty years ago, respecting the important part incessantly performed in the economy of nature by these humble creatures in the elaboration of soils and their adaptation to the requirements of plant life. The observations were made in a garden having a surface layer of mould overlying a yellow diluvial sand. Von Hensen describes how the adult worms come to the surface of the earth at night, and, with their tails in their holes, calmly survey the country round before they sally forth in quest of food, in the shape of leaves, twigs, &c. These they heap up round the entrances, the leaves being rolled up separately and partly drawn into the holes, where they soon become macerated and partly decomposed, in which state they are swallowed by the worms. The worm tubes were not easily traced in the garden mould, but in the sandy subsoil they were clearly distinguishable, and were found to descend to depths of from 3 ft. to 6 ft. The tubes were found to be lined with stones about the size of a pin's head, brought from the surface; and fruit kernals were also found in them. Their walls, too, contained little black masses of characteristic shape, the excreta of the worms. Besides these freshly inhabited holes were others which have been abandoned, and the cavities of which were filled up with black earth, the black matter being diffused into the surrounding sand, and these again passing insensibly into mere black streaks of mould penetrating the sandy subsoil. In about half the uninhabited tubes were found the roots of plants growing on the surface, and these followed exactly the course of the tubes, putting out their fibres through the black walls of the tubes. An extended series of observations led to the conclusion that, as a rule, the roots of annual plants can only find their way down to the moister subsoil through channels thus prepared for them by earthworms. Chemical and microscopic analyses of the contents of the intestines and of the "casts" of the worms showed them to be nearly identical in composition with ordinary "leaf-mould," such as is obtained by mixing fallen leaves and sand and leaving them for a couple of years until decomposition is complete. To ascertain the precise part played by the earthworm in the production of ordinary vegetable mould, Van Henson placed two worms in a glass vessel filled with sand, the surface of which was strewed from time to time with fallen leaves. The worms set to work at once, and at the end of six weeks the surface of the sand was covered with a layer of mould half an inch thick, whilst some of the leaves had been carried down to a depth of 3 in. below it. The worm tubes permeated the sand in all directions—some were quite fresh, others had walls of organic matter one-eighth of an inch thick, whilst others, again, were quite filled up with mould. In short, the soil was perfectly prepared for the growth of plants. A single earthworm weighs on an average 36 grains, and is estimated to produce in twenty-four hours 8 grains of excrement. Allowing 34,000 worms to an acre, weighing together 2 cwt., this would give 37 lb. of vegetable mould in the finest state of comminution, passed through their bodies every twenty-four hours, over and above the work done in removing vegetable refuse from the surface and working and opening up passages in the soil, thus facilitating the admission of air and moisture and the passage of the more delicate and absorbent portions of the roots of vegetation. Mr. Darwin was assuredly right when he said that in tillage the agriculturist was "only imitating, in a clumsy manner, without being able to bury the pebbles or sift the fine from the coarse soil, the work which nature is daily performing by the agency of the earthworm."

Fuchsia Regalia.—This is the brightest and best of the variegated Fuchsias that has yet come under my notice; Sunray will bear no comparison with it. It has a neat twiggy habit, and soom makes useful little specimens, under pot culture, for the decoration of either windows or conservatory shelves.—H.

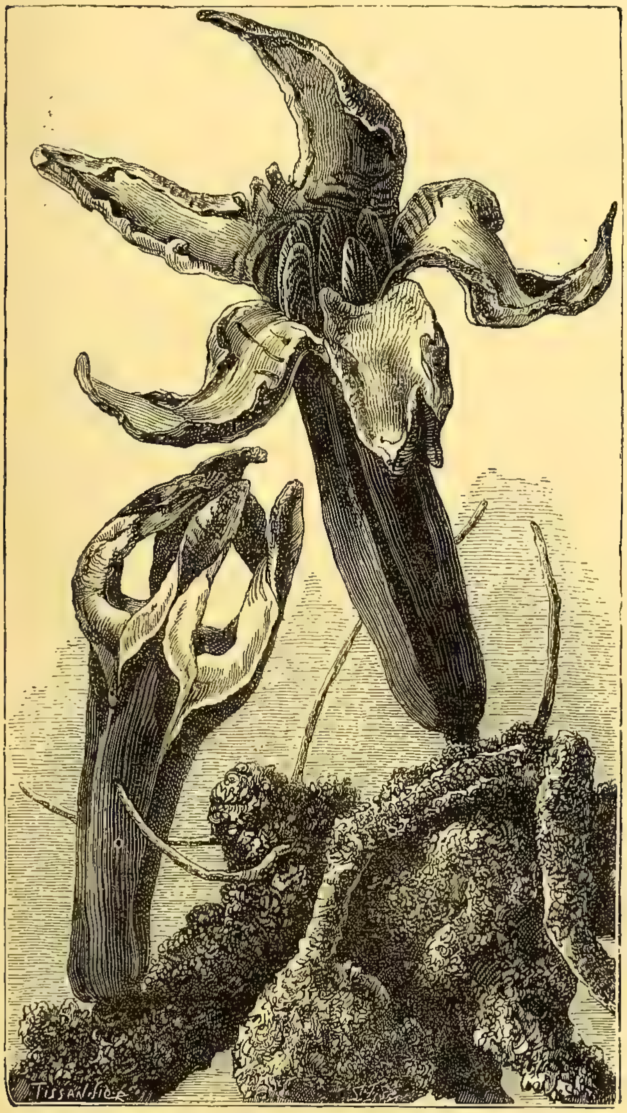
Nelumbium aspericaule.—This has recently been in flower in the Lily-house at Kew. Horticulturally speaking, it is a slight improvement on N. speciosum as far as the flower is concerned; otherwise the two plants cannot well be distinguised from each other. The late Mr. Silvester, who raised it from seed, used to grow several species, so there is a possibility of N. aspericaule being a cross-bred.—S

Tomato Disease.—We have this season lost all our Tomatoes from a disease similar to that which affects the Potato. The plants were attacked simultaneously with Potatoes which were growing alongside of them. "Salus" was applied, but without avail. Can anyone vouchsafe a remedy or preventive, so as to counteract a similar loss in future?—W. W. H.

MADAGASCAR CHRISTMAS ROSES.

(HYDNORAS).

These singular Fungus-like plants, supposed to be natives of Madagascar, are known there under the name of Christmas Roses—it being stated that they bloom with almost mathematical precision on Christmas-day. Their odour is most offensive, resembling that of tainted meat. The upper part only of the blooms rises above the soil, but when fully spread out they look like a star with five points. The flower, which is of a livid colour, only lasts one day. A short time before blooming the soil is thrown up and large protuberances like great Truffles rise out of it; these are the buds. The development of the roots is so rapid and in some cases so powerful that this curious parasite positively becomes formidable. The species of Hydnora found at the Cape of Good Hope is said to resemble Mushrooms and is often eaten, in a cooked state, by the natives.—" La Nature."



Preserving Colour in Dried Flowers.—Botanists, to whom the rapid loss of colour in the flowers preserved in Herbaria, has been a source of regret, will be pleased to learn (according to a Vienna journal) that if plants be dipped in a warm mixture of one part of hydrochloric acid (spirits of salt), and 600 of alcohol before being placed between driers for herbarium purposes they will not only dry with greater quickness, but will retain their natural hues.

" There are but two fine things in the world," says Malherbe, " women and Roses."

THE FRUIT GARDEN.

BUSH OR UNDER FRUIT IN KENT.

(*Concluded from p.* 334).

A brief description of the various kinds of fruit known as bush, soft, or under fruit must now be given, as these form a very important part of the fruits grown in Kent.

Gooseberries.—The Gooseberry bush is planted under Filbert, Apple, and other fruit trees, and does remarkably well upon the loam, " pinnock," and the lighter soils of the Hythe beds. It thrives best in fairly dry land, and is grown extensively in the neighbourhood of Maidstone, paying very well on suitable land. It is also grown in East Kent under Apple and Plum trees, and more largely still in West Kent. These bushes are usually set about 6 ft. apart under full standards and Filberts, or 1210 plants to the acre; and 5½ ft. apart, or 1440 plants to the acre, when put by themselves or under Plums or Damsons. Growers having short leases, or growers whose landlords decline to find standard trees, frequently make plantations of Gooseberry or Currant bushes alone, which come to bear in two or three years and pay well, if well managed, for a few years without renewal. Mr. Webb relates that a grower near Maidstone made £100 in one year, from one acre of Gooseberry bushes. The average return from an acre in full bearing, is probably about £33, from which must be deducted at least £22 for expenses of all kinds. The method of propagating these bushes is to select straight portions of the leading shoots cut off in the winter, to reduce them to about 8 in. in length, and to set them in rows in a nursery. They are kept well trimmed, and are ready for planting out in two years or so, being trained in a cup-like form, from one stem about 10 in. from the ground. All rank-growing branches are cut away every year, and a supply of moderately young wood is reserved for fruit-bearing. The land is dug in the winter, and manured with rags, shoddy, sprats, &c. It is hoed two or three times in the summer. Though the sorts of Gooseberries are legion, amounting to over 300 varieties according to Mr. Darwin, Kent growers chiefly grow the Whitesmith, Warrington, Lancashire Lad, Crown Bob, Yellow Rifleman, Velvet White, Golden Drop, and Monarch. Should the demand be good, many of the Gooseberries, especially the Whitesmith and Crown Bob sorts, are sent up green for bottling and cooking, directly they are large enough. The Warrington, a medium-sized red berry that ripens about the latest of all, being most excellent for preserving, having a sub-acid flavour, is very largely grown. Besides these qualities it has a peculiar arrangement of its thorns, which are so disposed that they serve to protect the buds in the winter from the onslaught of small birds, which are very fond of them, and do infinite mischief in plantations near woods. Bullfinches are especially troublesome in this respect, so much so, that fruit-growers set a price of 2d. each upon their heads. Red worsted is often put over the bushes to frighten the birds away.

Currants.—Red, White and Black Currants are grown in great quantities in Mid and West Kent, and to some extent in East Kent. Black Currants have been lately planted to a considerable extent in the Weald of Kent. Currants are usually grown under fruit-trees: they are, however, occasionally put by themselves. The Red Currant is indigenous in this country, according to Phillips. There are not many sorts of it. Dr. Hogg mentions only five or six. The Dutch, Raby Castle, and the Scotch,—which is by far the best, though it is not mentioned by Hogg,—are generally planted in Kent. This fruit is not so profitable as the Gooseberry. The bushes are raised from cuttings, and are cultivated in the same way as Gooseberry bushes, only that in pruning them nearly all the growing wood is cut away, the fruit-buds coming on small shoots or " snags " thrown out each year from the older wood. The inside of the bush is therefore kept cleared well out to allow air and light to get to the bunches on the inner side of the fruit-bearing branches. Red Currants are in great demand for bottling, for jam, and for Currant jelly; they are packed in sieves weighing 48 lb., and make from 2d. to 2½d. per lb. White Currants are not much grown. They ripen well under even the darkest shade of standards. They are only used for dessert purposes. The Black Currant is a most profitable fruit when the bushes are planted upon suitable soil. It is very much grown upon heavy, sticky land, which can hardly be too wet. The bushes are raised from cuttings, and their growth is very rapid. Pruners cut away the greatest part of the wood, as the fruit comes best and largest on young wood. No wood is left over two years old. The wood does not grow from a stem, as in the case of other Currant and Gooseberry bushes, but from a "stub" or stock close to the ground, like Ribes in shrubberies. Only two sorts are grown—the Black Naples and the old Black. This fruit always sells well for jam, jelly, and lozenge-making. About 3d. per lb. is the average price of it in London. An average crop of Black Currants would be at the rate of 3000 lb. per acre, though as much as 6000 lb. has been grown per acre upon land planted with these bushes alone.

Strawberries.—This fruit is largely cultivated in West Kent, and not to any extent for market purposes in other parts of the county more distant from London, on account of its perishable nature. It is not uncommon to find individuals having as many as 100 acres of Strawberries in this district, chiefly planted upon the clays of the Thanet beds, in many cases upon grubbed woodland, which suits them remarkably well. An owner of land in this neighbourhood states that poor woodland, whose underwood was never worth more than £7 or £8 per acre at twelve or fourteen years' growth, has yielded as much as £150 per acre when grubbed and planted with Strawberries; but this was in the earlier, palmy days of Strawberry growing. Clay land suits Strawberry plants best, though they grow fairly well upon sandy soils, but do not bear much fruit after three years. On the clay they come into full bearing at the expiration of three years, and continue to be fairly productive for six years or so. Strawberry plants are propagated by the long runners which cover, and strike root in, the ground in the autumn. When it is desired to obtain young plants, these runners are not cut away as usual directly after the fruit has been picked, but are left until some rootlets have been formed at their joints, and then taken up and planted. The price for these is about 5s. per 1000. The chief sorts planted are, the British Queen, one of the best Strawberries, of great size and fine flavour; Keen's Seedling; Princess Alice, an early sort; Comte de Paris, an early Strawberry and an excellent bearer; the Elton Pine; Goliath, one of the best sorts for culture on a large scale; Eleanor, described by Dr. Hogg as "able to endure drought without material injury"; and Sir Joseph Paxton, a large prolific sort. Previous to planting, the land is well manured and hand-dug to get a level surface, which ploughing and harrowing would not obtain. The plants are set in rows 2 ft. 6 in. wide, and about 1 ft. 6 in. from plant to plant in the rows, giving about 10,500 plants per acre. The rows are put thus far apart in order that horse-hoeing may be done, and some growers have lately put the plants in 2 ft. 6 in. apart each way, which would give rather less than 7000 plants per acre, in order that the horse-hoe might work in all directions, and the expense of labour be much diminshed. In an established Strawberry plantation, the "runners" are cut away in the autumn, being generally used for propagation, and the land is dug by hand. In the spring the horse-hoes, and hand-hoes where the plants are set closely in the rows, are continually worked to keep down the weeds. Just before the fruit is changing its colour, the ground is covered with rough manure, or straw cut into 6-in. lengths, laid carefully under the plants to keep the fruit from the dirt, to stimulate the growth of the plants, and to retain the moisture in the soil, which is most essential for the plants. This covering of rough material also serves for manure for the next season. Strawberries for eating must be picked very early in the morning in order that they may be fresh and firm. They are generally picked by gangs of men and boys, who sally forth at 3 a.m. and leave off at 7 a.m. This matutinal fruit is put into "punnets," containing about 1 lb. weight, which are again packed in deal boxes holding about five dozen "punnets," and sent off by the earliest trains to Covent Garden. For this, which is the *crême de la crême* of the fruit, as much as £5 per box is sometimes realised, or 1s. 8d. per lb. Women do not pick the best Strawberries, as they do not like the very early hours, and their clothes damage the fruit; but they arrange them deftly in the punnets and boxes in a shed or tent close to the field. Some growers sell the produce of their Strawberry plantations to middlemen, who pick, pack, sell, and take all risk, at an average price of £18 per acre. Others make contracts with jam makers to supply them with Strawberries at from £18 to £28 per ton. In this case the fruit is gathered at all times of the day, and sent to the jam manufactories in tubs containing 80 or 100 lb. weight of fruit. The average price of the fruit in London is about 7d. per lb. When the price falls below 3d. per lb. there is not much profit in its production. Strawberry growing is a very pleasant and a fairly profitable business when carried on under favourable conditions near the metropolis, and it seems hardly possible that home or foreign competition can interfere much with the fortunate cultivators in West Kent.

Raspberries are also largely grown in this part of the county as well as to a small extent near Maidstone and Sandwich. The "canes" are raised easily and quickly from cuttings, and are planted between Currants and other bushes; or by themselves, about 15 in. distant from each other, in rows wide enough apart for purposes of cultivation, being treated as regards cultivation and manure in the same manner as fruit-bushes. When this fruit is grown on a large scale, stakes and espaliers are dispensed with, the canes are cut down in the winter to about 3 ft. in height, the old wood that has ceased to bear is cut away, and as much of the young wood as is not required. Care should be taken to retain those canes that are stoutest and have short joints. The fruit is picked by women and children, and is usually sold to contractors at from £18 to £26 per ton. It is packed in tubs in order that the abundant juices may be preserved. Some of the largest, firmest, and best fruit is sent to market in punnets for dessert, but the bulk of it goes to the jam manufacturers. The average price of this fruit for the last six years in London has been about 3d. per lb.

The details and descriptions that have been given of fruit-growing in Kent will serve to show that it is a pleasant, interesting, and fairly profitable occupation, as well as that some parts of the county are eminently suitable for this purpose in regard to soil, situation, and climate. It has been remarked that considerable improvement has been made of late years in the methods of planting, cultivating, manuring, and pruning fruit-trees, and that more attention has been given to the selection of varieties; though in these respects there is still much to be desired. Kentish fruit-growers do not use their skill, energy, and capital sufficiently in the production of high-class fruit. They are satisfied rather with the production of quantities of common kinds, such as Gooseberries, Currants, Cherries, Damsons, which do not entail much skill or care, of which fruits there is either a general glut or a general comparative scarcity in the market. Fine-grown Apples, choice dessert Pears, large brilliant Plums, are always in request and bring remunerative prices; but it cannot be expected that such fruit can be grown by the systems of management that have, as a rule, until recently prevailed. The producers of fruit have been too much mere fruit farmers, having practised the rough-and-ready ways adopted in their cultivation of ordinary crops. There are signs that all this is being changed, and that proper attention is being bestowed upon details, upon minutiæ which are essential to ensure success. It is possible that foreign competition, which is increasing year by year, coupled with a largely increasing home production, may affect the profits of growing "soft" fruit and the more common kinds; but, with regard to fine dessert fruit, it is not likely that there will be too much if the growers have a due regard to the selection of sorts that will succeed each other in regular rotation, and keep their fruit at home until it is fit for market. It is too much the custom to send all fruit, that ought to be kept, away when it is gathered, on account of the trouble and uncertainties of "harvesting" at home. If the growers will not undertake this, they cannot expect the full return from their fruit land, nor will the public have a steady supply of fruit fit for the table. A very great waste of fine fruit takes place because so little is kept at home by the producers until it is ripe; and much goes to the "smashers" that would fetch full dessert prices in its due season. Many complaints have been made lately of the scarcity of fruit in many places, and it was justly remarked by Mr. Bartley, that many of the poorer classes never taste fruit, which is so grateful and even necessary to some constitutions. This scarcity is due to the centralization of the fruit supply in London and other large towns, caused obviously by the reason that the sale of consignments is practically certain at some prices—the market-price of the day. Soft fruit in many cases will not bear a second journey, and it constantly happens in the season that the costermongers are traversing London, taking fresh fruit to the slums and alleys at the cheapest rate; for instance, selling fine Bigarreau Cherries at 1½d. per lb., while the inhabitants of the towns and villages within twenty miles of the metropolis, even in fruit-growing districts, can hardly get fruit at any price. Jam makers always stand ready to take immense quantities of all kinds of fruit in plentiful seasons, as the price is low and the jam will keep for a "rainy day." It is true that fruit of all kinds goes from London to the largest northern towns, but the risks of the fruit not finding a market are few where the population is dense and jam manufactories exist.

Fruit-growers can hardly help to remedy this monopoly of soft fruit in thickly populated places, as the article is so highly perishable. They can, however, better regulate the supply of hard fruit, such as Apples, Pears, and Filberts, by a better arrangement of varieties in their plantations, and by forwarding to market only fruit actually fit for consumption; by doing this they would prevent a great deal of waste, and obtain far better prices for their produce.

SOME NEW GRAPES.

To Grape-growers, great and small, anything new in the way of Grapes is always a matter of interest. When a new variety comes out with high recommendations, enthusiastic cultivators cannot rest till they get it, whatever the price may be, and some, on the mere strength of a recommendation, will make room for it to the exclusion of all others. This was the case, in not a few instances, with that most erratic variety Mrs. Pince, which was sent out as the best late-keeping Grape in existence; one judge of Grapes stated, and truly no doubt, that he had kept a bunch of it in his office for a month without shrivelling, without being bottled, or supported in any way. On the strength of such recommendations it was extensively planted—in some places whole houses of it, which, to our knowledge, have since been rooted out in disappointment. Yet Mrs. Pince is a good Grape in some situations; but it is not a Grape for general planting like Alicante, Lady Downe's, or Gros Colman, which have stood the test under many different circumstances. We have seen and heard of good examples of Mrs. Pince, and there are some who say that it does better with them than any other of its class; but such cases are exceptional, and the best proof of this is that the majority of those who have tried it do not trust to it as a general cropper, while it is seldom seen in first-rate condition on the exhibition table. We have seen it under various aspects, and tried it on its own roots, and grafted on the best late stocks, which improve it considerably; but it seldom colours or keeps well. It is not so apt to damp off, but the berries shrivel, in which condition, however, they sometimes keep for a long time. With us this takes place when grown on its own roots, or when grafted. Some of our late Vines, such as Alicante and Lady Downe's are grafted half-way up with Mrs. Pince, the fruit of which never colours perfectly, and always shrivels by scores; while the Alicante and Lady Downe's, on the lower part of the same rods, get quite black, and keep till May in fine condition, and this has been the case every year since Mrs. Pince was sent out, for we procured it at once. It is, however, a better-flavoured Grape than the two named, and for that reason is preferable to them, but only when it is found to succeed as well.

Golden Champion.—This has been one of the most abused as well as the most praised Grape ever sent out, but must now be described as a very uncertain kind, and not one for general culture. The Vine is a very vigorous grower, the berries are unusually large, with a deliciously-refreshing flavour when quite ripe; but before they get that length the bunches are decimated by spot, which may be checked greatly by giving them time to ripen and a dry atmosphere, but is seldom wholly prevented. If for nothing but its magnificent appearance, it is, however, well worth a place in a mixed collection, and should be grafted on the Muscat of Alexandria.

The Duke.—A good, large-berried, and well-flavoured Grape, but delicate, like the others, and difficult to finish. We have never seen it so good anywhere as at Clovenfords, in the hands of the raiser. It is a desirable Grape to grow, but is not one for planting extensively.

Pearson's Golden Queen.—The great fault of nearly all the new Grapes sent out within the last twenty years is that they have some marked constitutional defect—they spot, crack, shrivel, fail to colour, or perhaps set badly; but the Golden Queen, though it is only of second-rate flavour, is at least hardy, has a good constitution, and quite equal to the Black Hamburgh or any of the old standard sorts in that respect. It is a very good grower, a free bearer, a good setter, colours well, and keeps pretty well, and may be recommended either for late or early work. The flavour is fair, but not first-rate; it is likely to become a standard variety.

Venn's Black Muscat.—This variety is so like the Muscat Hamburgh, even to its worst faults, as hardly to be distinguished from it. It possesses the true Muscat flavour, but that is all that can be said in its favour. Like the Muscat Hamburgh, it will probably be found to succeed in some situations; but hitherto we have hardly heard one good account of it. We have one strong Vine of it here in a mixed collection, all of which do well but it; and the bunches it has produced the last two years are simply miserable abortions, owing to the fruit setting so badly.

Madresfield Court.—Were it not for its propensity to split, this would undoubtedly be reckoned one of the finest Grapes in cultivation. The Vine is a good grower, and the bunches and berries are large and shapely, and the flavour excellent, but the propensity of the berries to crack and then rot before they are quite ripe frequently spoils the entire crop. For this reason it is not extensively grown. Too much water at the root is said to be the cause of the splitting; all that we can say is, that the Vine which does worst with us here is growing in the driest corner of an inside border, while another Vine which has to share in the watering with the others—and we water liberally—usually finishes pretty well. The only other difference in the position of the two is that the Vine that does best is more shaded than the others, or at least the fruit is, for it is growing at the west end of the Vinery, and receives the afternoon sun for several hours every day. The Madresfield Court should, however, be tried in every collection, and grown extensively where it succeeds. It is an early kind.

Mrs. Pearson.—We cannot say much about this Grape yet from personal experience, but so far it seems to bear out the character given to it. It is yellow in colour, described as being as large in bunch and berry as the Black Alicante and as good a keeper, and having a Frontignan flavour, a character which should insure its popularity without fail. A yellow Grape, possessing keeping qualities like the Alicante with a Frontignan flavour, would be an acquisition indeed! It puzzles me to learn how such a Grape was raised from the Black Alicante, which has nothing in common with the Frontignans.

Two other Grapes raised by Mr. Pearson are Dr. Hogg and Ferdinand de Lesseps, neither of which, however, are so good as the two first-named, but worth adding to mixed collections for the sake of variety.

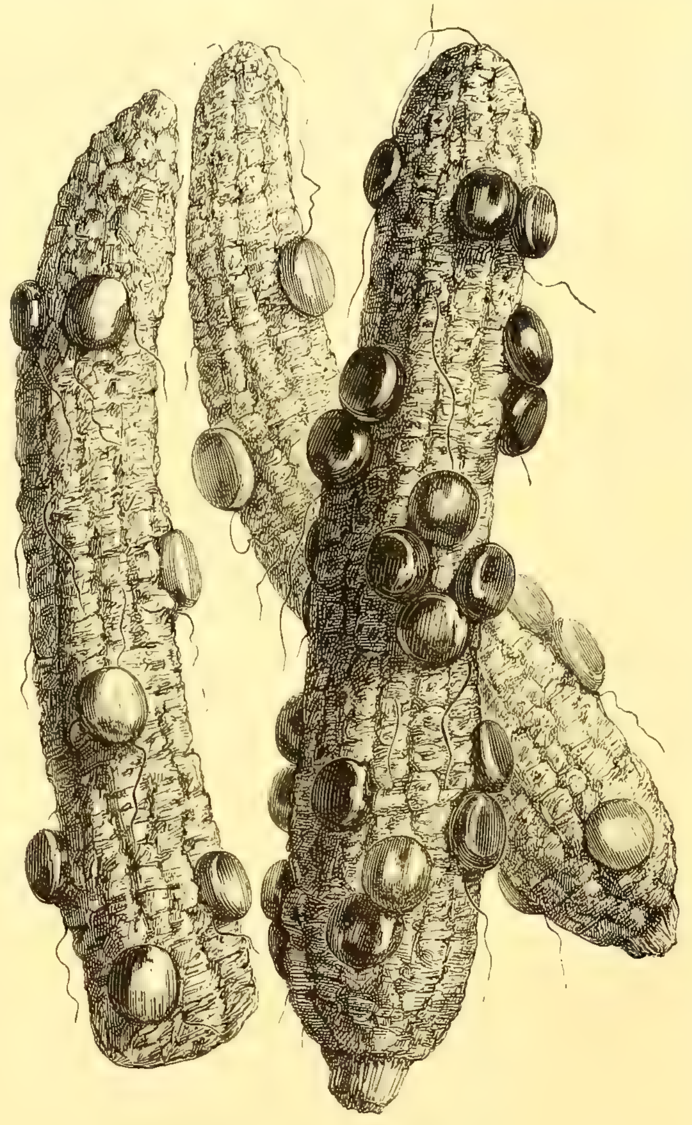
We have here referred to some of what may be called the older new Grapes, because their merits continue to be discussed in the gardening papers, and very various opinions are expressed regarding them; but we have here described them, as we think pretty truly, from personal acquaintance of most of them, and a knowledge of their behaviour under very different circumstances and in places widely apart. Though excellent in many respects, none of them will do for general cropping, for which we must still rely on the old Black Hamburgh, Muscat of Alexandria, Lady Downe's, Black Alicante, Gros Colman (the latter for size of berry), and, we may add, the agreeably-flavoured Frontignans.—"Field."

Sweet Apples.—Of forty-three varieties of Apples tested by M. A. Truelle of the Chemical Society of Paris, the red American Reinette was found to contain the largest amount of sugar.

Remedies for Injuries to Fruit Trees are mentioned by Herr Lucas in a late work on orcharding. According to him, wounds of the usual sort are best treated by cutting out the injured part, and smearing the parts laid bare by the incision with resin or tar. Washing them with water and bandaging with wet cloths, have also frequently produced good results. Wounds on the trunks of smooth-barked trees, caused by hailstones, should be smeared with a mixture of clay and cow manure. Fruit trees injured by late frosts, if the bark looks spotted and the liber assumes a reddish appearance, should be scarified at once, or the strips of bark may be cut out in the direction of the length of the trunk, and the line of the incision filled up with paste made of clay, cow manure, and ashes.

BEST CROPPING HARDY FRUIT TREES.

The general failure of the fruit crops this year will doubtless make all those who intend to plant young trees try to find out the varieties that have borne the best crops in their different localities. To begin with Apples, the best bearing varieties here have been, amongst the early ripening kinds, the Irish Peach, Early Harvest, and Early Strawberry; of the mid-season sorts, Lord Suffield, Duchess of Oldenburgh, Cox's Pomona, Small's Admirable, King of the Pippins, and Cox's Orange Pippin; and of the late or winter-keeping sorts, New Hawthornden, Tower of Glammis, Blenheim Pippin, Lord Burghley, Dumelow's Seedling or Wellington, and Sturmer Pippin. The early varieties of Pears that have had half a crop on them have been Beurré Giffard, Clapp's Favourite (an American Pear of good flavour), Beurré d'Amanlis, and Williams' Bon Chrétien; of the mid-season Pears, Louise Bonne of Jersey, Fondante d'Automne, Doyenné du Comice, Thompson's, and Comte de Lamy; and of the latest, Knight's Monarch, Ne Plus Meuris, Easter Beurré, and Hacon's Incomparable. All kinds of Plums have been a complete failure, that great bearer in most years, the Victoria, having only very thin crops even in the most sheltered situations. Of Cherries, although I never saw the bloom more abundant, only the May Duke and Morello on walls produced crops. There is not the least doubt that by the selection of free-bearing hardy fruit trees in planting new orchards and waste grounds, the production of fruit in this country might be doubled, and a check put to the importation of so much hardy fruit from abroad to our markets. Of course, in unfavourable seasons like the present, the foreigners, from their better climate, would always have the advantage, and the higher prices given them for fruit would compensate them for the carriage; but in plentiful fruit years here, this will not be the case. If new orchards planted with the free-bearing sorts of Apples, Pears, and Plums were substituted for old, unproductive ones, and if all waste grounds and even hedge-rows were planted in places out of the reach of the million, what quantities of fruit might be grown, and then the markets might be supplied at a cheap rate. The best cropped small orchard I have seen this year was where there had been a quarry, and where the *débris* of the magnesian limestone surface had been placed in it to fill it up. The tenant, an industrious man, had barrowed and carted all the road-scrapings within his reach in which to plant the trees, and they seldom miss bearing fine fruit.—W. Tillery, *Welbeck*, in "Florist."



Maize, showing effects of parthenogenesis.

Parthenogenesis in the Case of Maize.—We planted at regular distances apart, and with some degree of care, a large quantity of Maize plants, some with red seed, and some with yellow; also three other named kinds, each variety being kept separate, and as soon as they arrived at the flowering stage we examined them daily, and removed all the male flowers. We did not wait until these were even apparent; but, removing the envelopes surrounding them in the bud stage, we cut away all the male flowers before they had time to open.—[So speaks M. Carrière in the "Revue Horticole," and gives this, among other illustrations, of seed being produced by Maize without fertilization, which, however, would require further confirmation, inasmuch as pollen from other plants anywhere in the same district could be easily carried to those from which the male flowers were removed by wind or birds.]

PHYSICAL GEOGRAPHY.*

The seventh edition of this standard manual contains a large amount of information relative to the distribution of vegetable life over the different parts of the earth's surface, which cannot fail to be both valuable and interesting to both horticulturists and botanists. Five chapters are devoted to Vegetation and its distribution over the globe. The author sets out with a concise description of the various vital processes concerned in the growth of plants, as well as of the elements which enter into their composition. The classification and distribution of plants are next treated of at some length, after which the author describes the vegetation of the different parts of the earth in detail. The plants of the great Continents are first treated of, after which the reader is taken on a pleasant botanical excursion through the Arctic and sub-Arctic regions, Great Britain, and Middle and Southern Europe. Temperate Asia, one of the most interesting botanical regions of the Old World, is next fully described, travelling botanists being reminded that for its size no country has so abundant and varied a flora as Asia Minor. We next come to the flora of the Indo-Chinese Peninsula, Indian Archipelago, and India proper. Austria and Africa come in for a fair share of attention, the vegetation of the Cape being well described, and its affinities with that of Australia being specially pointed out. The peculiar character of Australian and Polynesian vegetation is also alluded to. North and South America are deservedly very fully described; Mexico, the West Indies, and tropical America receiving special notice, the whole concluding with an account of the peculiar vegetation of Kerguelen's Sound, Tierra del Fuego, and the Antarctic regions generally. The chapter on marine vegetation will be perused with interest by algologists. We may add that several improvements have been introduced into this edition.

THE ENVIRONS OF LONDON.†

This work, which is both useful and interesting, should find a place on the bookshelf of every one who desires to have something more than a mere topographical account of the towns and villages and private places of interest within a twenty-mile-circle or so round

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"Physical Geography." By Mary Somerville. Seventh Edition. London: John Murray, 1877.

† "Handbook to the Environs of London" (2 vols). By James Thorne, M.A. London: John Murray, Albemarle Street.

London. The principal features, historical and otherwise, of each place are carefully noted, and as a book of reference it will be found invaluable; it may, indeed, be styled a pleasant-reading gazetteer of London's surroundings. The names of the different places are arranged alphabetically, and there is also a copious index. From a horticultural point of view, of course, little can be expected, but old and famous trees to be found in the different parks within, and even some distance beyond, the twenty-mile-circle, are briefly alluded to. Altogether, the work is one which we can heartily recommend.

EXTINCT MAMMALS OF AUSTRALIA.*

This work may be regarded as a supplementary volume to the original edition of Cuvier's "Recherches sur les Ossemens Fossiles" (4to, 1821). In that work but one extinct species had been referred to the Marsupial Order, viz., the famous "Didelphys gypsorum" (vol. iii. pl. lxxi.), and the osteology of the existing species is not described as in the case of the placenta Mammalia, of which the fossil evidences are there so richly illustrated. The author of the present work has accordingly added descriptions and figures of the osteology and dentition of the existing Marsupialia to those of the fossil remains of the extinct species; the characteristics of the bony structure and teeth of the wombats and kangaroos are shown in detail. As in the great work of Cuvier, the several memoirs by which the discoveries and determinations of the fossils were first made known, are reproduced with additional matter and in systematic order. A chapter is premised on the fossil Marsupials of England, with figures illustrative of twenty-eight species, referable to fifteen genera. Of the extinct Marsupials which have left their remains in Rhætic, Oolitic, and Purbeck deposits in England, some exemplify or pre-figure, in a singular and interesting manner, genera and species of Marsupials which have left their remains in the comparatively recent drift-deposits and in the caves of Australia.

After a survey of the 522 pages and 132 plates recording these "Researches on the Fossil Mammals of Australia," to which the author has devoted part of his annual labours since 1836, he might well be pardoned in indulging "in the flattering thought that the chances were small of future discoveries of new species of large extinct marsupial quadrupeds in the Australian Continent." But he checks himself by the following remark:—"Warned, however, by the rate of progress of the science of palæontology since the demise of its founder in 1832, I deem it more probable that a like lapse of time after the issue of the present volumes will have been attended by such rich results to the young and ardent naturalists of Australia as to show that their predecessor at home had but 'skimmed the cream,' and given them the broad outlines of a picture of ancient animated Nature which their labours will fill in and finish."

In the descriptions and plates of the present work, devoted not only to the characteristic fossils of the extinct families, genera, and species, but also to the dentition and osteology of the still existing types, the generations issuing from the colonial schools, colleges, and universities of Australia, of whom some may be irresistibly led, like those of the present generation of Anglo-Americans, to investigate and interpret the phenomena of an environing Nature, will find an instrument which will facilitate and accelerate their endeavours to reconstruct the strange forms of mammalian life which once traversed the Australian plains and scrubs and have long since passed away from that continent.—"Annals of Natural History."

[Notwithstanding the abundance of literary journals, it sometimes happens that the noblest books receive little or no notice. This will probably be the case with this great work, of which a comparatively small number has been printed.]

MUMMY WHEAT—WILL IT GERMINATE?

On Sunday week, the Rev. C. Shakspeare, in commencing a sermon at St. Stephen's, Westbourne Park, on the words "Except a corn of Wheat fall into the ground and die, it abideth alone," referred to the somewhat common belief that the so-called Mummy Wheat found in Egyptian tombs has been known to germinate and grow on being planted, notwithstanding its burial for more than 4000 years. The preacher said that this fact, "if it were a fact," was an interesting illustration for his purpose, but he was careful not to stake an argument upon a statement which, he said, had been called in question by scientific men. Mr. Shakspeare has since received the following letter, which he has forwarded to us with the request that we would, if possible, state the real facts of the case:—

"A lady, who had the privelege of hearing Mr. Shakspeare preach on Sunday morning last, thought it a great pity he threw doubt over his own illustrations of the Mummy Wheat. It is a well-known fact that the experiment was tried in England, and with the most perfect success, producing a large field of corn of very large growth. More than that, a lady to whom she spoke of it on Sunday evening had herself seen the result of an experiment tried in a sunny spot in Scotland, twenty-eight years ago, at Admiral Duff's, Drum Muir Castle, Co. Banff, and that the ears of corn were nearly as large round as her wrist, and otherwise quite unlike English Wheat. Drum Muir Castle has now passed into the possession of Colonel Gordon she believes, and probably all appearance of the Mummy Wheat may have vanished." On reading this letter, we at once recollected that the case referred to by the writer had been recently dealt with in one of our scientific journals, and the circumstances fully explained which led to the erroneous popular belief in the subject. We have the impression that the refutation was given either in the pages of "Nature" or The Garden during the past year, but have been unable to refer to the file. In the interval, we have forwarded the letter to Professor Henslow, who has kindly sent us the following reply:—"The lady is evidently confounding 'Egyptian' Wheat with 'Mummy' Wheat. The former is a variety which produces several ears in a cluster on one stalk. The latter is Wheat (grains) found in catacombs of Egypt, and which has never germinated when planted. The reported cases of Mummy Wheat having grown were undoubtedly erroneous. Many years ago my father carefully examined some samples and also made careful enquiries. The examination revealed not only decidedly fresh grains, but fragments of Indian corn, an American plant! Enquiries proved that the Mummy Wheat had been put into a common corn jar of Alexandria, which accounted for fresh grains, so that whenever Mummy Wheat was 'supposed' to have germinated, it was undoubtedly recent grain mixed with it. The true Mummy Wheat is dark brown and carbonised.—G. Henslow."—"Bayswater Chronicle."

At What Depth should Bulbs be Planted?—This is a question of some importance. My experience is decidedly in favour of deep planting for such bulbs as Winter Aconite, Crocus, Snowdrop, Narcissus, and Hyacinth. The depth should perhaps vary with the soil, being greatest in light open soils, but I have not found 1 ft. above the crown of the bulb too much in any soil. The tendency of the Crocus, where not covered with turf, is to work upwards, new bulbs forming every year on the crown of the old bulb, but probably this tendency is counteracted in their natural state. In Nottingham meadows, where the blue Crocus is naturalised, I used often to dig them up, and think the average depth is about 1 ft. The surface of the ground is probably raised there by the alluvial deposits of floods faster than the new bulbs rise, but in getting up Snowdrops, Crocuses, or Daffodils which have been accidently left wild, I have generally been surprised at the depth of the bulbs. In fields of stiff red clay in Cheshire the common double Daffodil flowers in luxuriant clumps, which I have wished to divide, and found that the full depth of a garden spade, 18 in., does not reach the bulbs. The common autumn Crocus (Colchicum autumnale), which is perhaps a native there, grows nearly as deep. Again, where garden ground has been dug deeply, we see here and there a Crocus or Snowdrop which has been accidentally buried, flowering quite as well as any others, and on taking it up to restore it to its proper place, are surprised to find that not only is the bulb at least 1 ft. deep, but also upside down. The obvious advantage of deep planting in mixed borders is, that spring bulbs so planted need not in any way interfere with such plants as scarlet Pelargoniums or blue Lobelias planted over them, not to mention instances where cultivators, who have not enough to do, employ their superfluous time in autumn in digging the mixed herbaceous borders, an evil practice I have much dicffiulty in preventing. Of course the rule of deep planting does not apply to all bulbs, exceptions are Anemones, Cyclamens, &c. I believe that Hyacinths and Polyanthus Narcissus, where the soil is light, may with advantage be covered to a depth of 18 in.—C. W. Dod, in "Gardeners' Chronicle."

William the First Pea.—In addition to this being the best early Pea in cultivation, it is also one of the most valuable of late kinds. It bears freely late in September, when the pods are fresh and their contents well flavoured. Mr. Pragnell showed a dish of it at the Crystal Palace the other week equal in every respect to those gathered in July.—C. S.

Small Brussels Sprouts Best.—While in England people are generally anxious to choose the largest, in Belgium, which is supposed to be the home of Brussels Sprouts, they prefer the small and firm sprouts to large ones, thinking them better in flavour.—L.

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* "Researches on the Fossil Remains of the Extinct Mammals of Australia; with a Notice of the Extinct Marsupials of England." By Richard Owen, C.B., F.R.S. Two vols. 4to. Erxleben: London, 1877.

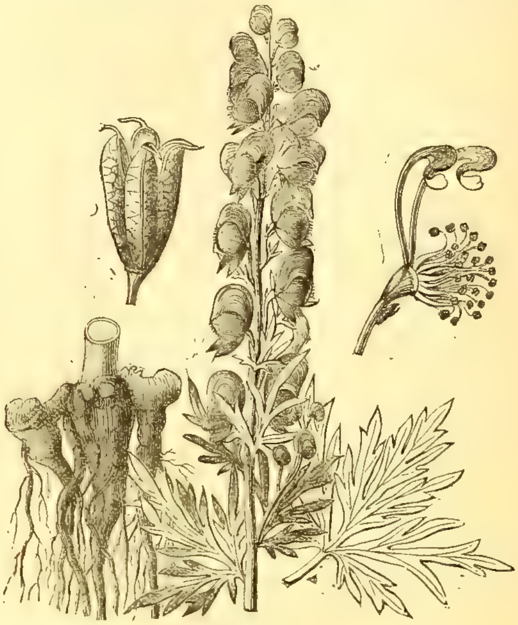
THE GARDEN OF BRITISH WILD FLOWERS.

Larkspur (Delphinium Ajacis).—An annual corn-field weed like the Larkspur, which is naturalised in Cambridgeshire, and occasionally occurs in other counties, must have many good qualities if it is to hold its own against equally hardy perennial species. New hardy Delphiniums are constantly brought out, growing in any soil, 2 ft. to 5 ft. high, and with flowers of nearly every colour, and few plants look better in a copse or shrubbery with Pæonies and other large herbaceous plants than these do; yet there is some charm of delicacy in habit and foliage which seems confined to the annual Larkspurs, and their many colours—even in a level sheet in a border, shown up by the pure pale green of their finely-cut leaves—are very attractive. The wild Larkspur is found with blue, white, or pink flowers, sometimes colouring entire fields in June and July. Its fairy-like spikes of bloom have, however, so much individual beauty that I like to see them also isolated, either on the margin of some rustic kitchen garden, or by the pebbled footpath leading to the cottage door; or, better still, growing one above the other at all levels on rockwork, some rising wholly, some in part, above the sky-line. They should be so placed that plenty of sun may show their transparent texture. The British species is distributed throughout Central and Southern Europe and North Africa, and is an introduced weed in the United States. It is interesting botanically from not being the Delphinium Ajacis or consolida of Linnæus, though described under the former name by Reichenbach, and under the latter in many British floras. Among the best hardy perennial forms are D. formosum and D. nudicaule.

Common Annual Larkspur.

Monk's-hood (Aconitum Napellus).—Though its dark-blue flowers, with the purple and white ones of its South-European congener, Aconitum variegatum, render the Monk's-hood suitable for such situations as I have just mentioned for the perennial Larkspurs, where it will grow 4 ft. or 5 ft. high, yet there is a coarseness of habit about the majority of the genus that I consider detracts considerably from their merits. As cut flowers they are not equal to Larkspurs, Salvias, or Lobelias in clearness of colour or beauty of form. They are virulently poisonous, but there can be no excuse for the carelessness which has mistaken their roots for Horseradish, and this character need not deter us from cultivating the "Monk's-hood darkly blue," as Clare calls it. It is a hardy, blue-flowered perennial, and is apparently a native of Wales, Hereford, Gloucester, and Somerset, where it grows in shady places near streams. We have not many blue herbaceous perennials. The Monk's-hood is generally distributed eastwards to the Himalayas. The effect of a mass of this plant with the Great Hairy Willow-herb (Epilobium hirsutum) by a streamlet in some woody glen would be worth trying. The variety called bicolor might be used.

Monk's-hood.



Parts of Monk's-hood.

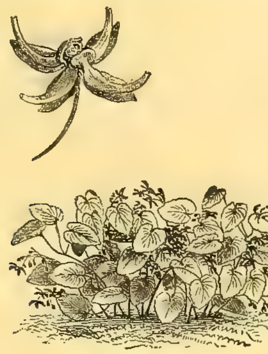
The Baneberry (Actæa spicata).—A diminutive, shrubby little plant, not often seen in gardens, and, though distributed throughout Europe and extra-tropical Asia, not common in a wild state but occurring in the copses of Yorkshire and the Lake district on a limestone soil. The Baneberry, or Herb-Christopher (Actæa spicata), is worthy of a corner on the rockwork. It seldom exceeds 2 ft. in height, and is not much branched; its whitish raceme of flowers, though somewhat graceful and Mignonette-like, is insignificant, and its blackish fruit is poisonous. Its one redeeming feature is its delicate, long-stalked, root-leaves, which, though sufficiently resembling those of an Elder to justify the name of the plant, are still more like those of some of the justly-popular Maples. In North America the plant has red berries, and a mixture of the two might look well in autumn.

Baneberry.

The Barberry (Berberis vulgaris).—The shrubby little Baneberry, with its fruit so unlike that of other Ranunculads, forms a not unnatural transition to the tribe of the Barrenworts and Barberries. Scarcely any item in the autumnal beauties of an old-fashioned garden is more beautiful than the drooping clusters of the orange-red fruit of the common Barberry (Berberis vulgaris). Hanging from some ruined wall, as at Buildwas Abbey, or draping rough masses of cold grey rocks, as it does round the valley of Interlaken, or in the many positions where it grows wild, the Barberry is strikingly beautiful; nor is its beauty confined to autumn, for in May and June its racemes of sulphur-yellow flowers, with their curiously irritable stamens, much haunted by bees, render it a shrub which should not be overlooked by cultivators. Though its favourite wild haunts, alike with its rugged, spiny habit, point to the overhanging limestone crag as its most suitable location, it will flourish equally well in the border, shrubbery, or hedgerow, and seeing that there are some fifty other species in the genus, besides the varieties of this species known as lutea, violacea, purpurea, nigra, and alba, with yellow, violet, purple, black, and white fruit respectively, the cultivator ought not to lack variety.

The Alpine Barrenwort (Epimedium alpinum).—Though having no claims to be considered a native of Britain, the Alpine Barrenwort (Epimedium alpinum) has too many good points to be passed over in silence. It is a herbaceous perennial, seldom exceeding 1 ft. in height. It forms a clump of the most delicate leaves, triply divided in three or tri-ternate, each young leaflet having the texture of a Wood Sorrel, and the unusual and graceful form of a Begonia, while it is fringed with spiny hairs. From amongst its foliage rises a loose raceme of quaintly-structured blossoms, four spreading maroon sepals in each, supporting four pale green, slipper-shaped nectaries, nearly resembling the petals of the Hellebores. This interesting plant, which is a native of Southern Europe, does best in a moist, peaty, or vegetable soil, in some shady corner of the shrubbery or rockwork. It flowers early in spring, and is propagated by dividing the root-stock. It occurs in a wild state in the Bingley Woods, six miles from North Bierley, and at Fountains Abbey, in Yorkshire, on Carrick Fell and Skiddaw, at Cleish Castle, Kinross, and Mugdoch Castle, Glasgow. The Persian species, E. pinnatum, grows somewhat larger, and, though perfectly hardy, requires rather warmer situations.

G. S. Boulger.



Alpine Barrenwort.

AUTUMN-FLOWERING SHRUBS.

Autumn is the season of fruit rather than flowers. And yet the rains of September renew so thoroughly the vivid green of the Grass, and many trees retain so entirely the beauty of their foliage, that one feels the more a lack of flowers. Nearly all the finest shrubs have bloomed in June or July, and only a few remain to continue the flowering season. It becomes somewhat important, therefore, to the amateur that his knowledge should afford every means within reach to lengthen out this season. Without pausing to dwell upon the exquisite beauties of autumn Roses, we note first the noble masses of Hydrangea paniculata grandiflora, plants or groups of which make such prominent objects in the landscape. What can be finer than these great clusters of white flowers, passing, as the season advances, through varying shades of light green, rose, reddish purple, and deep red? The flower is not satisfactory when plucked. A certain coarseness adheres to it, which is not lessened by the great size and sameness of structure. Seen on the lawn, however, it is difficult to surpass; indeed, it ranks with many persons, as the very best of shrubs. So grand an individual as this Hydrangea quite overshadows the merits of other late-flowering shrubs, not excepting even the beautiful Hydrangeas from Japan, such as Otaksa, &c., which are gradually making their way into public favour after the slow manner of all new plants. Another well known but valuable shrub for this season is the Althæa (Hibiscus), bearing large flowers often striped with white, purple, red, and pink. Both plant and flower, however, are somewhat coarse in construction and colouring, but the late-blooming property, a bright, glowing aspect, and great vigour and aptitude for growing in hedges or large masses, will always render it very important to the landscape gardener. More humble plants are the Hypericums (St. John's-wort). Most of them bloom late in summer or early fall, and their profuse, bright yellow flowers, studded over dwarf, compact bushes, present a very pleasing effect at this season. H. kalmianum is especially attractive with its shining, evergreen-looking foliage and numerous flowers, remarkable for many anthers. These shrubs have been long known and esteemed, but have never received the attention they deserved. Potentilla fruticosa is another pretty autumn-flowering shrub, with yellow flowers and somewhat silvery or glaucous foliage; it is of low growth, but more erect usually than Hypericums. Two or three pretty Spiræas also bloom at this season, bearing more or less pink blossoms, and having the respective names of S. Billiardi, S. Regeliana, and S. Nobleana. The study of the various seasons of flowering peculiar to shrubs and trees should receive more attention, for there is very much that might be done in this way to render our grounds more attractive than they usually are in autumn.

Samuel Parsons, in "Country Gentleman."

Violet Banks.—Violets are such universal favourites that any vacant spaces may be profitably planted with them by way of additions to the regular beds of them in kitchen gardens or forcing grounds. As a rule, we get the finest blossoms of both double and single varieties from one-year-old plants, raised annually from runners, and confined to single crowns after the manner in which Strawberries are prepared for forcing. It frequently, however, happens that there are warm sheltered banks under the partial shade of orchards, and by woodland walks, where, with good preparation previous to planting, Violets will flourish for years, and produce abundance of the finest blossoms with but little attention except that of keeping coarse weeds from overgrowing them. I have just planted such a bank under the shelter of a tall Hawthorn hedge; it was prepared as follows—the soil being stiff and encroached on by roots, was deeply cultivated, and severel loads of roads scrapings and leaf-mould were added to it in the form of a top dressing, sloping it gently to the south. In this the runners of Neapalitan, Double Blue, and the Czar(single blue) were planted 1 ft. apart each way and kept watered until they had become well established. The Czar, being a vigorons kind will probably overgrow the other sorts in time, but after four or five year's existence such banks will well repay replanting, and charming combinations may be formed by adding such roots and bulbs as those of Lily of the Valley, Squills, and other plants of like character that succeed under similar circumstances.—James Groom, *Henham.*

Three Days' Shows.—The great shows of the current year being over, the framing of new schedules for 1878 will soon occupy attention; indeed, one or two are already in print,and as three days' shows, which terminate on Saturdays, seem to be the order of the day, permit me to direct attention to the great loss, inconvenience, and sacrifice which attend these arrangements, and to enquire if something cannot be done to help distant exhibitiors, who are obliged to pack and travel the day before the shows open to the public, and cannot by any possible chance return before the following Monday. If large shows are to be made to pay, I am well aware that they must be attended by the masses, and we are told that Saturdays are the only paying days; but, judging from appearances, I am inclined to think that the majority of visitors could have attended the September shows equally well earlier in the week, when owners of valuable plants might have reached home with their treasures on Saturday, and exhibitors of fruit would have been able to remove their produce while it was fit for use. When I state that the three great September shows this year represented in my case seventeen day's absence from home, including three Sundays, I feel sure that the hard-working Secretaries, to whom we are indebted for every facility and accommodation, will admit that we have a grievance to complain of; and as distant exhibitors cannot be dispensed with, I trust they will endeavour to make such future arrangements as will admit of getting home before Sunday. If this cannot be done, it is more than probable that many exhibitors of valuable plants and perishable fruit will be conspicuous by their absence. Another incovenience and annoyance with which exhibitors have to contend, is the way in which the public are allowed to elbow and impede them when they commence packing up after the exhibition is over. At the AlexanderPalace Show I discovered that the majority of the exhibitors, distaut and local,were strongly opposed to Saturday terminations; but no one seems to have taken the matter up, and as Societies may be labouring under the delusion that horticulturists are perfectly satisfied with their arrangements, I trust that these remarks may have the effect of bringing about a system of holding shows which will tend to the advancement of horticulture, by making the interests of promoters and producers mutual.—W. Coleman, *Eastnor.*

Hydrangea paniculata.—Professor Rein, a Japanese traveller, says:—"Of all the specimens of Hydrangea, H. paniculata is the most widely dispersed in a wild state, ascending to an altitude of 5,000 ft., where it forms large bushes." We need not be susprised at its remarkable hardiness.

HARVEST DECORATIONS FOR CHURCHES.

At this season, when harvest thanksgiving services are being held, a hint or two on church decoration may prove interesting to some of the readers of The Garden who are, perchance, about to lend their aid in such work. As a rule, much more attention is paid to the Easter and Christmas church decorations than to those employed at this season, and this I consider a mistake, as a far finer effect can be produced with the materials now available than at either of the above-named seasons. Hot-house flowers can be obtained it is true during even the coldest weather, and lovely bouquets and wreaths are made therewith at Christmas, but as fine effects can be produced at this season with golden corn, fruit, and tinted foliage as it is possible to imagine. Where corn is employed for plume-shaped decorations, Oats are by far the most graceful; but where sharp outlines are required, I prefer Barley to Wheat, as it has a lighter effect. Letters for texts can be made of Barley or Wheat on a scarlet foundation. The prettiest plant for intermixing with corn are trails of the bright-tinted Virginian Creeper, just now in perfection; for twining up pillars and round capitals, no more charming plant can be found. If the sprays be light and liable to break, they should be supported by means of a slight wire fastened at intervals along the stem. It is best, if possible, to place the end of the stem in a pot or some such receptacle filled with wet sand, as otherwise the leaves will droop and the whole effect will be spoiled. For smaller decorations, tinted Vine leaves, and odds and ends of tinted foliage too numerous to name obtained from hedgerows, will befound most useful. In the way of coloured berries none will be found more deisirable than those of the Mountain Ash, and I have used Hips and Haws before now with happy results. There are, however, many berry-bearing plants in perfection just at this season, and I have named the above merely as examples. With regard to flowers we have at present large numbers, from amongst which may be selected the following, viz., Gladioli, Asters, Lilies, Hydrangeas, Roses, Dahlias, and Fuchsias. These are best suited for bold decorations, such as large crosses and devices for blank spaces on walls, and wreaths for pillows and window-sills, smaller varieties being best adapted for the decoration of the pulpit, reading-desk, or font. Fruit should always occupy a prominent place amongst harvest decorations; it looks well intermingled with flowers and foliage round the chancel or at the base of the pulpit. Amongst the smaller flowers some blooms of Cornflower should be obtained, if possible, as they are in keeping with the Oats and Barley. Annie Hassard.

Why is the Climate of Europe Growing Colder?—A Swedish paper, just received, publishes an interesting article under this heading. The article states that in the Bay of Komenok, near Koma, in Greenland, fossil and very characteristic remains of Palm and other trees have been discovered lately, which tend to show that in these parts formerly a rich vegetation must have existed. But the ice period of geologists arrived, and, as a consequence of the decreasing temperature, this fine vegetation was covered with ice and snow. This sinking in the temperature, which moved in a southerly direction, as can be proved by geological data, *i.e.*, the discovery of fossil plants of certain species, seems to be going on in our days also. During the last few years the ice has increased far towards the south; thus between Greenland and the Arctic Sea colossal masses of ice have accumulated. On European coasts navigators now frequently find ice in latitudes where it never existed before during the summer months, and the cold reigning upon the Scandinavian peninsula this summer results from the masses of ice which are floating in the region where the Gulf Stream bends towards our coasts.

Early Frosts in Antrim.—"A. D." remarks (see p. 328) that the frost on the 23rd and 24th of last month was very destructive in the case of certain flowers and vegetables in his locality, which was certainly bad enough at the dates named, but in this part of Ireland we had a severe frost much earlier, viz., on the night of the 3rd ult., which destroyed Dahlias, Nasturtiums, Alternantheras, Iresines, Perillas, Heliotropes, Dwarf and Runner Beans (which were late this year), and completely stopped the filling out of late Peas. The leaves of an ornamental Fig tree (a standard) were also blackened, and dropped off prematurely, and in the case of one or two Oriental Planes in the grounds, the young tender leaves were shrivelled up—in fact, the general "fall" of the leaf was, in consequence of the frost, brought on earlier than it otherwise would have been. Last year we had an exceptionally open autumn with no frost to do any harm until November.—S. K.

Select Edible Fungi.—I am very pleased with the paper on this subject which appeared in The Garden last Saturday. I have for some time been interested in such matters, and, living as we do in the country, the search for different kinds of fungi adds a charm to our country walks and drives. So far we have only proved the virtues of two kinds, the Hyduum repandum and the Chanterelle. Of these we all greatly prefer the flavour of the Hyduum, and as we have a large quantity growing in our own grounds, we have been able to have several dishes of it, which always call forth exclamations of praise from the younger branches at the table. All that has been said in favour of the qualities of the Spine-bearing Mushroom, when gently stewed with cream and butter, pepper and sail, and served very hot on buttered toast, we can fully endorse.—M. L. D.

Is Gas-tar Injurious to Trees? (see p. 287).—My experience entirely justifies Downing's recommendation of the use of gas-tar as a preventive of the attacks of rabbits upon the bark of newly-planted trees. I have used gas-tar, sometimes mixed with a little benzoline, if very stiff, for twenty-five years for Ash trees, Oak, Larch, Ivy, and other plants, without being aware of a single instance of injury. It has even been applied without injury to parts of the stem which have been already bitten and laid bare, whilst I never knew rabbits touch plants which have been so treated. I have also tarred the cuts of trees of all ages, after removing limbs close to the trunk, to keep wet from decaying the timber, instead of paint, with good effect, especially if the limbs are cut off in early summer when the sap is rising. —J. L. Rogers, *Penrose, Helston.*

Blanching Late Celery with Spent Tan.—The soil of the kitchen garden here is very strong and retentive, and I have great difficulty in keeping late Celery from rotting during the winter months. Of late years I have used old spent tan principally for earthing it up, and find it to be one of the best materials yet tried, both for keeping the plants free from slugs and from severe frosts. During winter, when there is much rain or snow falling, I have wooden coverings placed above the plants to throw the water off the rows; these coverings are formed of old slabs or planks of little value, and are nailed together in the form of a span roof, and sufficient space must be left below the covering to give the plants plenty of air. To obviate blanching the plants too much near the surface, these wooden coverings must only be kept on during very severe frosts, or in heavy falls of rain or snow.—William Tillery, *Welbeck.*

NOTES AND QUESTIONS—VARIOUS.

New Giant Yellow Zillan Onion.—In what does this differ from our old Danvers Yellow Onion? I have grown them both side by side this year, and cannot discover the slightest difference between them.—D. Lumsden, *Bloxholm.*

Autumn Strawberries.—I exhibited a dish of Strawberries (Viscomtesse Hericarte de Thury) the other day at South Kensington, which were gathered from a border that has furnished a continuous supply since the second week in August; I may also add that the first prize collection of fruit (eight dishes) shown by me at Norwich, on the 12th of September, contained a large dish of Strawberries of this variety.—Wm. Allan, *Gunton Park.*

The Service Tree in France.—A tree, says a homely French proverb, earns its living, and so the Walnut, the Apple, or Service-berry is allowed to overshadow the Wheat and the Barley undisturbed. The Walnut gives a most valuable crop, besides supplying the grower with oil, whilst the Apple is sold for cyder; and of the fruit of the Service-berry is made an excellent drink, something like cyder, for his own use. It is called here (in Anjou) the sorbier, or cormier, and its wood makes excellent walking-sticks. The rich foliage of these trees, drooping low over the waving corn, has a beautiful effect; some Wheat-fields are planted with them as thickly as an orchard.—"A Year in Western France."

The Phylloxera in Devonshire.—May I ask what the disease is which effects the Vine leaves herewith sent? On the roots, too, I observe a parasite, and with the microscope quantities are visible. I have been told it is the Phylloxera vastatrix! I planted twenty-seven Vines in June in a new Vinery, and I observed that four or five of them had small warts on the leaves; but, not thinking the matter one of any importance, I caused them to be planted. After a three months absence from home, I returned last week, and found that every Vine was affected, and my fears that all my money and care in making a new Vine border have been wasted are in a measure confirmed by referring to Mr. D. Thomson's book on the Grape Vine, where Phylloxera is described. Is the nurseryman who supplied these diseased canes liable to an action? for it can be easily proved by five witnesses that these warts were on several of the canes when they were delivered to me. I note what is said in the number of The Garden for January 13, but before I do anything I should wish to know whether I have got Phylloxera or not.—J. G.., *Exmouth.* [It is the Phylloxera which has attacked your Vines; as regards the legal question, you must consult a solicitor.—M.

No. 309.] SATURDAY, OCTOBER 20, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

A PAPER ON MODERN "TASTE."*

It appears to be generally assumed that there has been no little advance in English society of late years in regard to what is called "good taste," an expression often very vaguely used, but which we may take to imply the critical perception of the distinction between what is graceful and suitable in form and harmonious in colour in all the objects with which we surround our daily lives, and what is the reverse of all this. This movement in the direction of good taste is, perhaps, hardly as general as is sometimes supposed. As far as we can judge, it has hardly reached the mass of the trading classes at all; and perhaps there are not a few among the professedly more cultured clssses who are still sublimely indifferent to the designs of their tables and chairs, their carpets and wall-papers. But even these have to swim with the stream, and this indifference to the æsthetics of house furniture and decoration can hardly be openly professed by any who have the hope of social salvation before their eyes. It would be very untrue to say that there is nothing to congratulate ourselves upon in regard to this recent outbreak of "taste." It is certainly a fact that we now not unfrequently see rooms the *ensemble* of which is harmonious and grateful to our sense of colour, and in which there is no object which can be said to be in a tawdry or vulgar taste, and this is wherefore to be thankful. It is when we come to consider these results not absolutely but relatively—relatively to the principle from which they appear to spring, on the one hand, and to the ultimate ends of art on the other hand, that we seem to meet with that which must give us pause. The theory underlying this movement, with those who think about reasons and principles at all, is what has become almost a "Shibboleth" among art critics of the day, that art and artistic feeling are as much shown in the design of furniture and other accessories as in what have been hitherto considered the higher or "fine" arts of sculpture and painting. The practical corollary to this is found in the existence of numerous establishments devoted especially to the production of what is termed "art-furniture." Now this phrase alone, so familiar to us in print and in conversation, constitutes in itself a begging of the whole question, an indication of a view of the subject radically false and unreal. A great Scotchman, John Stuart Mill, in his memorable address at St. Andrews (which suggests to us more about the true relation of art to our intellectual life than can be found in whole volumes of "art-criticism"), observed that art might, from one point of view, be regarded as the endeavour after the perfection of execution. The definition, at all events, precisely covers the section of the subject which we are just now considering. So far as relates to furniture — to the class of articles which are in the first instance for practical use, and only in a secondary sense ornamental—that is truly artistic which is made, firstly, in the best possible way in relation to the use for which it is intended, and the material of which it is constructed; and, secondly, which expresses in the best and most graceful manner, in the shape and treatment of each portion, the motive and use of the whole, and the special character of the material. We might say that when an object—a sofa, for instance—has the first of these qualties, it is workman-like; when to these is super-added that of expression, or expressive execution, it may rightly be called artistic; but, in fact, the two qualities can seldom be separated or divorced. What is truly workman-like is almost always artistic; what is unworkman-like is invariably inartistic—unsatisfactory to our sense of beauty and fitness. There is not, therefore, and cannot be, rightly speaking, any such thing as "art-furniture," considered as a separate species of article; and to go into a cabinet-maker's and ask for art-furniture is as reasonable as it would be to go into a bootmaker's shop and ask for a pair of art-boots. The request in either case would in reality be for something made for another object than that for which it professes to be made—for show and not for use. In any sense in which the expression is worth anything, all furniture ought to be "art-furniture," and if it is not it is badly made. What is actually meant by art furniture, as sold in the æsthetic warehouse, is furniture which is a copy of something else that was in fashion at some former period of our history. Much of what is now made as art-furniture, for instance, is in the style which has lately been distinguished as that of the "Queen Anne" period, which has superseded the Modern-Mediæval type, though there is combined with this a taste for furniture of a simpler (and, to my thinking, better) Old English style. A good deal of the furniture of these types is far more artistic and tasteful than that which was in vogue in the last generation, so that the impression conveyed is of a more or less general improvement of taste. But that this is to a great extent a superficial appearance is shown by the fact that the bad is taken along with the good. Were there space here to go into details of criticism, it would be easy to show that while some of the furniture-work referred to is good, some of it is as bad and vulgar in taste as it well could be; but it is all alike accepted by the public, and recommended not only by dealers, but by writers and critics who aspire to guide public taste. Indolence of mind, coupled with a desire for show, is at the root of all this. That which might be rightly called artistic furniture, is valuable precisely in proportion to the thought that has been put into it; every detail should bear the impress of having been thought out in reference to the material and the use to which it is to be put. If it were usual to have furniture and other accessories so designed as to represent the thought of the workman and the individual taste of the owner, it would have a real interest; but this involves too much trouble. The manufacturer is content to take a certain style and reproduce it, and say "this is artistic," and the purchaser, instead of cultivating his individual taste, and endeavouring to gratify it considerately and thoughtfully, so as to make his dwelling-rooms a part, so to speak, of his own individuality, is content with the easier task of paying his money, and taking what is set before him, furnishing his rooms after a pattern of a hundred years back, and sitting down and flattering himself that he has succeeded in being artistic, even sometimes at the expense of common convenience. If, for instance, you drop in to afternoon tea at an "æsthetic" house, you have your tea in cups without handles. Supposing, for the sake of argument, that the tea were hot (which æsthetic tea seldom is), you burn your fingers and nearly drop the cup; and then you are told, for consolation, that it is an artistic cup. If it were, it would have a handle, for the natural and proper way of making an object that is to be held in the hand is to give one something to hold it by. Even Macbeth, at a moment when his brain was in a very disordered and disturbed state, still preserved sense enough to see his visionary dagger with

> The handle towards my hand:

but then Macbeth was not æsthetic.

Even supposing, however, that the prevalent taste in furniture were logical and real in itself, there is a more serious question suggested by the importance attached to this class of work in comparison with what used to be considered the more intellectual forms of art. As was observed just now, it is almost a commonplace at present to urge that art is not confined to sculpture and painting, but should be shown in all the objects collected in a room, and that we should aim at totality of effect. If this meant that we were to bring furniture and decoration up to the level of the phonetic arts, in intellectual interest, there could be nothing to be said against it, except that it is hardly possible to do so. But the theory seems practically to result in an attempt to bring down painting to the level of furniture. A painting is no longer, according to this school of critics, to be a separate creation of the imagination, having its own interest and embodying its own idea, but it is to be a means of filling a panel as part of a scheme of decoration. It is probably to this theory that we owe the existence of a peculiar school of painting which has arisen lately, in which the object seems to be to eliminate all distinctive idea or intellectual meaning from a picture, and all direct reference to Nature, and to make the whole a mere matter of decorative colouring. The most common development of this form of art is familiar to most of us in the shape of those long-limbed female figures of neo-Greek type, clad in semi-diaphanous drapery, whose handsome faces have all the same placid vacuity of expression, and by whose side always stands an "art flower-pot," out of which grows a decorative plant. Very graceful are many of them (for, indeed, some of our finest draughtsmen have lent their talents to this style of painting), and very tired we get of their grace and their meaningless poses. Their faces are all alike; but their lack of distinctive character is compensated for by writing their names beside them, always remembering to jumble the letters about so as to make the reading of it as much of a puzzle as possible. They may be either the Months, or the Virtues, or anything else you like; they will do equally well for either, and the same figure may represent either "Chastity" or "November." But if we are inclined to feel bored at this repetition of a type, we are offered as a compensation any amount of old china. A lady who professes to be artistic is not happy till she has given her drawing room the aspect of a crockery-shop. You feel afraid to move about for fear of knocking over or shaking down something which you will be assured no money can replace. You go to the theatre to see a domestic comedy, and the actors seem scarcely able to find their way amid the collection of Japanese jars and screens, and blue china, with which the stage is crowded; and, to add insult to injury, if you do not like all this you are called a Philistine. The nameless opprobrium conveyed in that phrase might seem more applicable to a man who follows a multitude to hunt *bric-à-brac* than to those who fail to find this a sufficient motive for living. But, without calling names, and admitting that every one has a right to his own hobby, I protest against the assumption that this worship of furniture and china is an indication of an advanced preception in regard to art. As with furniture itself, so with art in its widest sense,the ultimate value to us is in proportion to the thought that is in it; and it is idle to pretend that the most piquant piece of china, the most artisticially-designed cabinet or wall-paper, can by possibility have the same intellectual meaning and interest as the productions of an art, which, like painting, can translate the poetry of Nature, can speak to us the language of the deepest human passion and emotion. To say that such an art as this is to be no more to us than a part of the furniture of our rooms; that upon some pretext of unity of effect our pictures are to be merely objects subordinate to a general scheme of decoration, is not to exalt art, but to degrade it, and is a view which could only be seriously held by those who have allowed their mental sympathies and perceptions to be narrowed and cramped to suit a conventional standard. One figure in which the passion or the hope, the joy or the grief, of the human soul is visibly symbolised; one landscape instinct with the light and air and the sentiment of Nature, does more to give interest and beauty to a room than all the sweepings of Wardour Street that can be collected in it. A picture that is worth anything is not a piece of decoration, but a separate poem in itself; and it is better to have such works, even in company with bad furniture, than to have a room filled with decorative furniture and piquant knick-knacks, but bare of anything that can appeal to our highest sympathies and aspirations as intellectual beings. Yet this is what is actually set before us now as the theory of an artistic dwelling, and what it is actually becoming more and more the fashion to put in practice. And the fact has an important significance in relation to social science, so far as that concerns the moral and intellectual aspect of our national life. It is a sign of something very unsound in the artistic taste and sentiment of the day that we should be exhorted systematically and on principle to rank the lower and more material forms of art, as equal to, or even above, those which appeal to our highest consciousness and perceptions. It seems a very false economical principle, so far as regards the encouragement of art, that people should be ready to give for an old jar, which may be ornamental, but which may as likely as not be ugly and grotesque in design, as much as would procure them a dozen drawings or etchings representing a far higher intellectual effort applied to a far higher end. But what is most serious is the moral aspect of the subject,—the falsity and pretentiousness of feeling which this artificial taste indicates. What was observed in regard to the art of the theatre is only a type of what we see in society. The acting is so tame and unreal that it hardly deceives any one; but the play is admirably mounted, and the decorations got up regardless of expense; only, unfortunately, the decorations themselves are a sham. We need by no means be indifferent to furniture; on the contrary, I would like, if it were possible, to see everything in a dwelling designed with a direct relation to its purpose, its position, the style of its accompaniments, and the special fancy of the inmates. But this is hardly attempted, for this would cost thought, and people wish to be artistic without thought, and at the cost of money only. What is really done is to fix upon a particular fashion of a past generation or of another country, to brand that as artistic, and to purchase as much of it as you can afford. The phenomenon is not new. There have been other periods in the history of our own and other societies when this imitation fashion has prevailed, and they have always been periods of pretence and hollowness, of an indifference to the highest and most serious ends of life. When people are much in earnest they do not care about tricking themselves out in borrowed decorations; it is an amusement for an idle hour; and the corollary to be drawn from the characteristics of the prevalent artistic taste of contemporary society is not a satisfactory one. It was the complaint of Wordsworth, at an early period of this century, that—

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*"Is the Prevalent Taste for 'Art Furniture' and Bric-a-Brac Indicative of a Sound or Healthy Æsthetic Culture?" By Mr. H. Heathcote, Statham. Read at the Social Science Congress, Aberdeen.

> Plain living and high thinking are no more.

He would hardly have considered that matters were much improved in this respect at present, when Art, which should be the expression of the highest thought and aspiration of a people, is coming to mean a mere arbitrarily chosen form of costly luxury, having no connection with the serious thoughts and problems of life, when, as it has been remarked, you may break any moral law, but you must admire blue china; when English ladies can so far forget their traditions of true dignity—so far mistake the accidentals for the essentials of refinement, as to masquerade in modern-antique costumes, which draw every eye—not, indeed, to the wearer, but to the costume. All this, done in the name of Art, is evidence not of true artistic feeling, but of a show and pretence at variance with what is best and noblest in art, which, if it were a reality, should lead us to quote again the words of Mill, to idealise not only every work we do, "but most of all our own characters and lives." This is hardly to be achieved by dressing out our life in a costume of borrowed finery, and dignifying it by the name of "art."

Note on the Dahlia.—*Apropos* of Mr. Hemsley's interesting sketch of the history of the Dahlia, it may be worth noting that there are in the British Museum Herbarium four sheets of Dahlia variabilis, from Lady Holland's garden, where they seem to have been collected in 1805. Only one is dated, but all appear to have been gathered at the same time. On one is written:—"This plant bears flowers of a deeper colour . . . the flowers are double, but only eight leaves were perfect. The petals *superius* deep purple and like velvet; *inferius* the same colour as the purpurea No. 1. Only two imperfect flowers appeared." On another is written:—"This plant came from seeds in 1805: the colour is stronger and dries much better: 8½ ft. high to the first top flower." There are also two sheets, labelled respectively D. pinnata and D. rosea, which bear the inscription:—"C. G. Ortega (Lady Bute.)" Ortega was Director of the Madrid Botanic Gardens from 1771 to 1801, which bears out Mr. Hemsley's statement that the Marchioness sent or brought seeds from Madrid, or, it may be, had them sent to her by Ortega. There is also a specimen of D. coccinea from Ortega, and two from "Lady Holland's garden," which are apparently contemporaneous with those of D. variabilis already mentioned.—James Britten.

Linaria repens (see p. 345).—This is well enough known near Henley, and is not so very rare in a wild state, as it abounds where it occurs; L. Pelisseriana would not get there.—M. B.

NOTES OF THE WEEK.

The Catalpa in October.—This is the only deciduous tree that bears in October the robes of July. We speak of London, where the Catalpa trees in the parks have lately been beautiful from the freshness and greenness of their ample leaves.

Pyrus arbutifolia.—This, although one of the most beautiful of our autumn-tinted trees, appears to be but little known. We have a large specimen of it in our nursery, which at present is a gorgeous spectacle, the flame-coloured upper surfaces of the leaves being very brilliant.—Robert Osborn, *Fulham.*

Bad Peaches.—A large yellow Clingstone Peach is yet coming in abundance from France, but for what purpose it is bought it is not easy to say, as anything more disagreeable in flavour has seldom left the apothecary's shop. The elements of the fruit seem to have decomposed during the long time it has been gathered before arriving at the ripe stage. If any wholesome supervision existed in our markets, the sale of such fruit would not be allowed.

Oranges from Brazil.—Among the many warm and temperate countries to which Orange culture has recently been extended, Brazil possesses one of the best fields for its cultivation. Fine examples of Oranges are now in Covent Garden from Brazil, and these are marked by their unusually large size, firmness, and great sweetness of taste. This to many will be a recommendation, but we prefer pleasantly acidulous Valencia fruit.

Apple Crops in Dorsetshire.—In this county the orchards of Cider Apples now present a striking appearance, the trees in some places being literally bent down by the weight of brightly-coloured fruit which they are bearing, and although there is almost a total absence of kitchen and dessert Apples in this county, there will be at least no scarcity of cider. Nothing can be more beautiful than these scarlet and crimson-fruited Cider Apples, and if skilfully associated with trees of other kinds in suitable situations, they would be effective as well as profitable.—C. S.

Improvements in Kensington Gardens.—We notice preparations for improvements in Kensington Gardens, particularly on the Bayswater side. We regret to see that several new walks form a part of the change; in all such cases it would be well to avoid the making of new walks, which more than anything else tend to cut up and destroy some of the most charming qualities in parks of all kinds. It is better to alter the direction of existing walks, to widen them as much as need be, than to create new ones without commanding reasons. We are pleased to note that an attempt will be made to embellish with flowers the Bayswater side of the park, and hope that the new borders there will be made as unlike those on the other side as possible, both in plan and plants.

Best Cropping Hardy Fruit Trees.—In so capricious a season as the present has proved to be for almost all sorts of outdoor fruits, it may be useful for cultivators to compare notes. Here is my experience:—Apples, with good crops, are Adams's Pearmain, Hawthornden, Passe Royal Russet, Redstreak, Box, Cornish Aromatic, Royal Monster, Slade's, Blue Pippin, Moshay Pippin, Aromatic Russet, Keswick Codlin, and Blenheim Orange; all others have failed. Pears, with good crops, are Easter Beurré, Duchesse d'Angoulême, and Crassane; all others have failed, even Marie Louise, usually a good cropper. Plums, all sorts failed. Peaches and Nectarines fair, but small. Apricots none. Gooseberries and Currants, very fair crops. J. L. Rogers, *Penrose, Cornwall.*

A Tree Studio. — The German Ambassador, Herr von Keudell, with a party of his countrymen, went the other day to Olevano to celebrate the taking possession of what has now become German territory in Italy. Olevano is a small town about fifteen miles distant from Valmontone, the fourth station from Rome on the way to Naples. Near it is an old grove a few acres in extent, upon which grow some of the finest specimens of evergreen Oak to be seen anywhere in the world. The spot was a favourite haunt of the artists in Rome, attracted by the wild beauty of the sight, and especially by the picturesque shapes of some of those venerable trees. The owners of the soil, who were born in the district, had made up their minds to cut down the timber and till the sacred ground. Upon hearing this, a distinguished artist from Dresden, who had frequently illustrated that wood scenery on canvas, offered to buy the property with the grand trees upon it. Having struck the bargain and paid the purchase-money, on the peasants' own terms, he offered his new possession as a present to his German Fatherland, on condition that it should become inalienable German national ground, to be held and taken care of for the benefit of the world's art.—"Times," Oct. 17.

Dabœcias in Hants.—When I mentioned to you the occurrence of the Irish Heath (Dabœcia polifolia) and Erica vagans, near Bournemouth, you asked for further details respecting them, which I now give. They both were found by me on a wild moor to the north of that town, and in tolerable abundance. For the former, only two habitats are given in such books as I can refer to; the latter I had met with only on the Serpentine, in Cornwall; therefore, it was probable that they had been introduced, and further search gave plants that certainly are foreign to our isles. It is right to mention this, though it may lessen the value of the discovery; at the same time, since they are both flourishing, and reproducing without aid from the hand of man, may they not fairly be considered natives in that habitat? Among the many who may be charmed with Bournemouth is the lover of wild flowers; he may, even in August, gather the prettiest of our English Heaths—Erica ciliaris, Gentiana pneumonanthe, &c.—if he knows whither to bend his steps.—M. Moggridge, 8, *Bina Gardens, South Kensington.*

Dracæna Goldieana. — This remarkable plant (previously announced as to be sent out next year) is now being distributed. In Mr. Bull's nursery, at Chelsea, so rich in new fine-foliaged plants, it occupies a foremost place, its zebra-like markings making it not only distinct from all other plants, but also quite separating it from all the numerous and varied members of its own family now in cultivation.

Gift of a Park to Lancaster.—Alderman Williamson has written to the Mayor of Lancaster, intimating that if the Town Council will sell him absolutely a plot of Lancaster-moor, about forty acres in extent, he will undertake to apply a sum of not less than £10,000, besides the agreed purchase-money, to converting that portion of the moor into a public park, and providing a fund for its maintenance as such for the free use and enjoyment of the people for ever.

Sedum Sieboldi in Vases.—The notice of these as grown in Prof. Owen's garden (see p. 320), we desire to supplement by a few words as to their size and culture. The largest plant is 2 ft. 7 in. in diameter, and has 286 flower-stems. They have been in the vases nine years without change. In May, or during very dry summer weather, a little weak liquid manure is given. As a foundation, the vase contains 2 in. of gravel-pebbles, and on this are placed 7 in. of mixed stiff loam and rotted leaf-mould, with a good admixture of silver sand. A little dried Fern is put loosely over the plants in winter, though this is probably needless. The plants are now in bloom, and form the most elegant vase plants we have noticed. On the level ground they never thrive half so well about London.

National Rose Society.—A meeting of this Society was held at the Horticultural Club, Adelphi Terrace, on Thursday, the 11th inst., and was attended by many of our chief Rosarians, including Messrs. Baker, Exeter; Camm, Monkton Wyld; Cant, Colchester; Cranston, Hereford; Captain Christie; G. Paul, Cheshunt; W. Paul, Waltham Cross; Scott, Bond Street; Turner, Slough, &c. The Rev. Canon Hole, President of the Society, was in the chair, and the accounts of the Society were read by the hon. secretary, the Rev. H. H. Dombrain. It was decided, after a long discussion, to hold the next exhibition of the Society in London, on the last Thursday in June, and there seemed to be a prevailing opinion that the Agricultural Hall would be an advantageous site for the show; a committee of inquiry was appointed. It was thought to be desirable to hold, if possible, a later exhibition, in the second week of July, inasmuch as the midland and northern Rose growers would be excluded from the show in June.

On Access to Public Herbaria.—The public, to a large extent (and also, we fear, some paid servants of the State), consider national collections of dried plants as preserved only for the select few. These, be it well understood, must even sometimes belong to the "clique" if they wish to work with comfort and for any length of time in some of our public institutions. It would be well if the poorest and most friendless person, who desires to consult our national herbariums, would bear in mind that the officials in such are the servants of the State, and that their duty is to make the treasures at their disposal convenient and accessible to all who defer to the necessary rules. In connection with this matter we may reprint the following words from a report in the "Times" of the Librarian Congress recently held in London:—"On 'Access to Librarians,' Mr. S. S. Green, Librarian to the Public Library, Worcester, Massachusetts, observed that in every library there ought to be a cultured person with good manners who could meet people half way; he should be not merely polite, but with some effusiveness of manner, and should go forward to give people information. In a public provincial library such a man would make the collection of books a university. He then related how a public collection of books given to a certain town in America was rarely consulted. A librarian was appointed, and by going to the door and welcoming the people as they came in, &c., he increased the numbers from 7000 in the first year to 10,000, 15,000, and 27,000 in the fourth year. After what he had said about the qualifications of a librarian, he felt some delicacy in saying that he was the man appointed. (Laughter and cheers.) He admitted that it was sometimes hard to disembarrass oneself of querists."

THE KITCHEN GARDEN.

DISEASE-PROOF POTATOES.

Some say that there is no such thing as a disease-proof Potato, but I have grown the Red-skinned Flourball and Late Rose for some years, and hitherto the percentage of loss, as regards these two kinds, has been so small that they may, I think, virtually be called here disease-proof, so far as the tubers are concerned; but the disease attacks the foliage the same as other kinds. I had a plot of Late Rose which, in a few days after the appearance of the disease, had lost every vestige of green, both as regards stem and foliage, and yet, when the crop was lifted, there were virtually no diseased tubers; but, unfortunately, on our soil the two kinds I have named are not first rate in quality. They improve, however, by keeping, being fairly good after Christmas, and they keep improving in quality till June. Looking at the Potato crop as a whole, I am disposed to take a very hopeful view of matters so far as regards the future, not because I think that Salus or any other remedy will either prevent or cure the disease, but solely because I believe, by a careful selection of varieties to suit different localities, we may nullify its ravages. As regards my own case, I have never had so good a stock of Potatoes laid up in capital condition from the same quantity of land as I have this year, although the disease has been rife and much destruction has ensued all around us. I think every grower ought to try a few experiments for himself, both as regards the most suitable kinds to grow and the best way of growing them. It is better to give up cultivating Potatoes altogether than to plant, year after year, the same kinds that have always failed. There are two operations that will have an influence for good upon next year's crop and which may be set about at once and be followed up as time permits. These are, firstly, ridge up as deeply as can be conveniently done, all land intended for Potatoes next year, leaving as much surface exposed as possible; and, secondly, gather up everything in the way of wood or turf ashes, turf parings, soot, old plaster, sweepings of the potting shed, and anything else of a similar nature, to work into a compost with which to cover the sets in the drills, instead of the highly-stimulating and sometimes rank manures that are frequently used. I do not believe in planting in poor hungry soil without manure for the purpose of leaving the disease nothing to feed upon. Such a course I believe to be unnecessary, and, in truth, I have always found a badly fed vegetable to be as unsatisfactory as the beef from a lean, half-starved ox. It has been said that it is better to have small Potatoes than none at all, but I am convinced no really good cultivator will rest satisfied with the comparative failure that such an admission implies.

As regards early and second early varieties, I have no sympathy with those who submit to their loss from disease, as, by timely lifting, the crop might certainly be saved. An important matter, as it appears to me, is finding out the kinds best adapted for each particular district or soil, and the culture and manures that are most suitable for them. To do this thoroughly there must be a general "turning over of new leaves," starting afresh on new lines, and although, perhaps, the disease may never be altogether stamped out, yet I feel sure that its effects may be so far reduced as to render it comparatively harmless. I have noticed of late years a tendency in field culture to grow second early kinds more largely, such as Early Rose and Snowflake, and this no doubt is a step in the right direction; and if lifted in good time the whole crop might be saved. Probably the market salesmen and consumers generally are, in some measure, responsible for this clinging to old kinds of Potatoes, and so things go on year after year, submitting to a loss of half the crop rather than trying anything fresh. It perhaps really affects the grower less, except in isolated cases, than the consumer, for the former probably receives as much for his half crop as he would have done for a good one, in consequence of the markets being higher. This is a matter in which every Potato grower and consumer is deeply interested, and ought to be taken into serious consideration by all; for to go on year after year submitting to failure, or at the best only obtaining a qualified kind of success, is not creditable to us.

E. Hobday.

Salus v. the Potato Disease.—During the last two or three years, the Dunbar Regents have been so severely smitten by disease here that I had made up my mind not to grow them again; but last spring, just about planting time, I so far altered my determination as to give them another trial, for the purpose of seeing what effect Salus would have upon the disease. They were arranged as follows:—In plot No. 1, the seed tubers were dressed with Salus at planting-time, and it was also dusted a little on the soil round the sets. In plot No. 2, the seed was dressed as in No. 1, and the whole plot was sprinkled over just previous to earthing the Potatoes up; and, just before the disease made its appearance, the plants were syringed all over with Salus dissolved in water at the rate of 1 oz. to the gallon, taking care to well wet the stems and foliage. To plot No. 3 I gave a heavy dressing between the rows, just previous to earthing up. In each plot selected for experiment, several rows were left, to which no Salus was applied, for comparison. The result was that there was no perceptible difference between any of the plots, all being as badly diseased as the rows that were left undressed. In taking up the Potatoes, it was remarked that the land where the heavy dressing of Salus had been applied appeared damper than elsewhere. This was probably due to the potash or salts fostering or encouraging the presence of moisture. Although Salus is never likely to have much effect in preventing or curing the Potato disease, it may perhaps, if it can be had cheap enough, make a useful top-dressing for many crops on light, porous soils, and insects do not seem to like it.—H., *Ramsay Abbey*.

Coal Ashes in the Garden.—It has been long known that coal ashes have the effect of mellowing heavy soils, particularly clay. A clay may thus be greatly improved in texture. It has been held that the fertilizing properties of coal ashes are small; repeated analyses have shown this. Yet, used as they have been in gardens, without other manure, the effect has been such as to lead irresistibly to the conclusion that they develop in some way a considerable amount of fertility. All cannot be accounted for by the mechanical improvement, as in cases where this is not lacking the effect is still present, and apparently undiminished, if not sometimes increased—in this case acting seemingly as wood ashes do, requiring other (organic) fertility to aid, if full results would be obtained. I was surprised, early in the season, on seeing unusually fine Tomatoes and Beans, to learn that the only manure used for them was coal ashes, scattered in the garden to get them out of the way. This was practised for several years, and no manure other than this had been used. My own experience is confirmatory, but I find that the effect is not immediate. It is more tardy than in the case of wood ashes, whose potash and soda act promptly. I would recommend that coal ashes, instead of being thrown away, be used in gardens, removing the coarser parts; also on Potato ground, always mixing them well with the soil, and as early as the ground will admit, and to be repeated yearly, thus giving time for effect upon the soil. I find the best success where the ashes have been applied for several years. The second year is sure to tell, even where thrown upon the ground and left to lie there undisturbed, as I have abundant evidence. But the place for full action is in the soil.—"Country Gentleman."

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Potato Disease, Lime, and Salus.—It is said that if land be either dressed with gas or common lime no disease will appear. I limed a piece of land this season, planted it with Potatoes, and afterwards dressed it with Salus; but I have lost half the crop from disease.—R. Gilbert, *Burghley*.

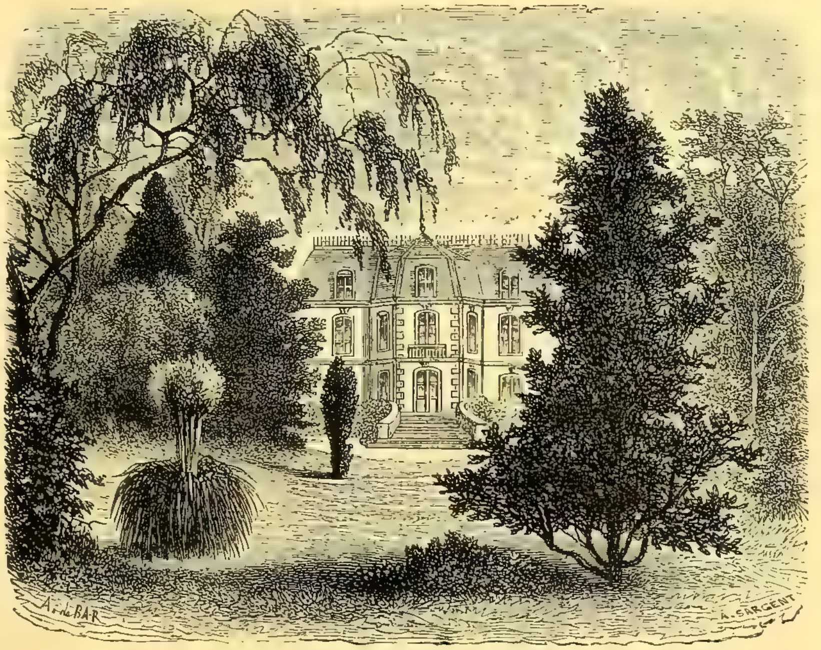
Tomato Disease.—The greater part of the crop of Tomatoes, grown out-of-doors here and at several places in this neighbourhood, has this season been destroyed by a disease similar in appearance to that which attacks the Potato. Fortunately I had planted a lot on the back wall of an orchard house, which have produced a very heavy crop of fine fruits entirely free from disease.—H. H., *Denne Park, Horsham*.

French Beans for Forcing.—From three successions of Beans which I have, I manage to keep up a constant supply. I find none to excel Osborn's Early Forcing all through the winter. It can be grown in 7-in. pots, and it wants no staking. All Bean forcers who have not tried this variety, which is a good cropper and well flavoured, should lose no time in trying it.—R. Gilbert, *Burghley*.

Cucumbers in Africa.—In Zanzibar Cucumbers of many varieties grow almost wild without sowing. The people declare they become bitter if touched by the hand in selling. The Arabs make from the seeds an oil of most delicate flavour for superior for salads to the best Lucchese oil. I have asked in vain in London for "Cucumber oil"—the vegetable is probably too expensive and the seeds too small to be thus used. About Lagos, however, on the slave coast, there is a Cucumber nearly 1 ft. long with large pips which could be sent northward. I commend the idea to those who are fond of oil.—Capt. Burton.

A SMALL GARDEN NOT SPOILED BY BEDS.

In large gardens, wise people sometimes manage to get a little freedom from the tormenting beds that have been the nearly worthless stock-in-trade of the landscape gardener for centuries; small ones are nearly always ruined by them. A bed, in the sense of a body of well prepared soil, is essential, and will always remain so in gardens; but it is not necessary that beds should expose their ugly forms. The best preparation needed for shrubs or flowers may be hidden beneath the foliage it supports or unsuspected below the green turf. When men come generally to see the meaning of real gardening, they will laugh at the endless weary strainings after patterns in beds. They will not admire a garden that is laid out as men used to design wall-paper; now better things are expected even of wall-paper designers. These few remarks occur to us in connection with a pretty little garden we passed the other day, and in it there were no beds at all in the central and important parts. Here is a little engraving of the spot, with its varied trees and choice shrubs, and masses of Rhododendrons against the house. In such a garden one may have as much variety of flowers as may be desired, and one of the ways of best attaining this end is by having groups of beds, simple in outline, a little way from the central scene. All the really fine hardy plants, from Tritomas to Grasses and Yuccas, may be planted to best effect in good ground, but not in formal beds; and where a geometrical series of beds is desired, they certainly will also be best on one side in a quiet nook, and not in the centre of, and dominating, all.



A small Garden not spoiled by beds.

Hardiness of Yucca Treculeana.—In the last number of The Garden (see p. 343) your correspondent "O." says that "Mr. Hemsley need not have the slightest doubt of this plant being hardy." I was aware that it may be seen in some of the nurseries around London, but I could not accept this fact as a sufficient proof of its hardiness, because I did not know whether it had stood the test of a severe winter; but since I wrote the notice of this fine Yucca, I have met with a more explicit record of its hardiness. It is to the effect that at Angers, in France, it ripens seed perfectly, and has there borne 18° and 25° of frost without injury. Very few plants will bear a greater amount of cold than they are exposed to in their native countries, consequently I felt justified in expressing a doubt as to the perfect hardiness of Yucca Treculeana.—W. B. Hemsley.

Liatris pycnostachya.—Although this is by no means a new plant, it is still sufficiently rare to justify a brief reference, as it affords an opportunity for calling attention to the value of many other species of this genus as ornaments of the mixed border. The L. pycnostachya grows in favourable soils from 3 ft. to 5 ft. high, with a stout, erect, simple stem thickly set with linear-lanceolate leaves, and terminated by a dense and thick club-shaped spike of flower-heads about 1 ft. in length. The flowers are rosy-purple, fewer in each head than in L. scariosa, L. squarrosa, and some others, but more effective from the closeness of the heads, and it is said to suffer less from drought than some other species, and than most other perennials. The root is a roundish corm or tuber, in which it agrees with nearly all the species except L. odoratissima, a plant which can also be recommended as well for its distinctness as a species as for the remarkable Vanilla-like fragrance of its foliage. W. Thompson, *Ipswich.*

THE CULTIVATION OF THE ROSE.*

In the following paper I shall endeavour to describe some of those essential items of culture most calculated to insure a fair measure of success. Although the Rose possesses charms which enchant the senses more than any other flower, it is, on the whole, void of some desirable qualities found in other genera of less pretensions, that is to say, the habit of the Rose forbids its combination with other plants with good effect; even in such gay company as scarlet Pelargoniums and Calceolarias it neither looks dignified, nor heightens the appearance of its neighbours. It is in groups alone and in the Rose garden that its supreme beauty is displayed to advantage.

Propagation by Cuttings.

With many others, I prefer this mode of propagation for dwarf plantations, which are, as a rule, pegged down near to the surface of the soil. Plants on their own roots can be handled with more freedom, and they will not trouble the cultivator by starting up "rogues," or stock shoots, as budded plants so frequently do. Roses will root freely if operated upon in the months of September and October by selecting well-matured growths. Such growths ought to be carefully chosen, with an eye to preserving a uniform number of growths on the plant left, while those detached ought to have a small portion of the previous year's growth, which is known in the profession as "heel." In forming the cuttings, the operator has first to cut off with a keen-edged knife a portion of this old wood intended to form a "heel," leaving about one-eighth of an inch for that purpose. The cuttings are then shortened back to 8 in. or 10 in. by taking off their tops, thus making them ready for insertion. In some localities cuttings root readily without the aid of protection, if planted at the bottom of a wall in a sunny part of the garden, and the weather prove favourable; but under all circumstances that process is assisted by a covering of glass. More especially is this protection essential where the place is cold, with a damp, adhesive soil, and the quantity of cuttings limited. Seeing the risk of diminishing the number is great in a cold, open aspect, it is preferable to form a comfortable bed for their reception under a glass frame or hand-glass. The bed ought to be 9 in. deep, composed of light, fresh loam, river sand, and leaf-mould, the last ingredients in equal proportions, while the loam should be present in greater quantities. Moderately beat the bed to a rather firm consistency, so that the cuttings are held secure after being inserted. Plant the cuttings in lines 8 in. apart, and 2 in. between the plants, inserting them so that three eyes are exposed above ground. Carefully tread the soil firmly around the cuttings as the work proceeds, and leave the surface trim and neat, after which give a moderate watering over the whole, and cover with the glass frame. Ventilate moderately daily, and shade when the sun shines strongly, but not otherwise. Nothing further need be said regarding the attention required, excepting that a couple of mats should be used to protect them from severe frost, but on no consideration should they be kept covered in the absence of frost. With such encouaagement, most of the cuttings will root, but Tea-scented and some of the Bourbon varieties are rather stubborn in that process. However, give them time; so long as their wood retains freshness, there is vitality in them. Keep the soil free from weeds and Moss; the latter is apt to accumulate when left undisturbed by the hoe. With the first indication of returning spring, allow a judicious quantity of water to be supplied by means of a pot provided with a rose. Keep the bed moist until the cuttings have assumed the character of plants, as indicated by their strength, or by the young shoots beginning to push. When it is ascertained by their growth that they are properly rooted, lift them carefully, and plant them at wider distances; shade from the sun, and keep rather close until the roots have retaken to the soil, when shading must be discontinued, and air admitted more freely. Ultimately, the sashes should be altogether removed.

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* Read at a meeting of the Scottish Horticultural Association, by Mr. A. Kerr.

Propagation by Layers.

This is a very successful method of increasing the stock of Roses, and may be effected with great ease with plants previously laid to the ground. The proper time to layer Roses is from June to the middle of July, but it is to their advantage to have it performed early, so that the layers get rooted before autumn is far advanced, else they will continue through the winter in the same state as they happen to be in the autumn. For layering, first have the bed pointed a few inches deep with a digging fork; follow this up by sifting an inch of sharp sand over the surface. Next stir with a Dutch hoe, leaving the surface level. Have the required number of hooked pegs, and likewise a similar quantity of short stakes. Proceed then by selecting such shoots as are most convenient, choosing those which are neither too strong nor too weak, but which show a good bone of ripe wood, yet not too hard ripe. Bend the middle of the shoots to the ground with both extremities inclining upwards, then make an incision exactly at that part where the shoot touches the ground. Direct the knife upwards, making a clean cut up the centre about 2 in. long, then hollow out the soil where this incision is intended to rest. Again bend the centre of the shoot, and cause the tongue of the slit thus formed to dip into the soil. Next fix it in position securely with a hooked peg, supporting the upper extremity by tying it to a stake, then fill up the hollow made for the reception of the layer. Three months after this operation most of those shoots ought to be rooted, when they may be separated from the mother plants, and potted into a loamy mixture, giving them the benefit of a cold frame for the succeeding winter. March is perhaps the best season of the year to have them turned out of their pots and transplanted where they are to form permanent plants.

Propagation by Budding.

This operation is at once an interesting and pleasing recreation, more especially to the amateur. To be an expert budder requires much practice—not that any material difficulty attends the performance of it, but what is demanded of the operator is care not to insert the knife too deeply while making the slit in the stock, causing damage to the wood and the thin layer of cambium, whose chief functions are to form new layers, heal up wounds, and form a union with the adopted bud or graft. This important formation is most sensitive to exposure to sun or wind, which causes it to brown and form a thin bark-like skin, making a union between it and the bud an impossibility. Being furnished with the required materials, commence by cutting back all the leaves of the shoot that is to furnish buds, also displace the spines or prickles from both it and the stock. Having now determined where to insert your bud, make an upright cut about 1. in long, penetrating the inner bark and no more. At the upper extremity of this incision make a horizontal cut; let the edge of the knife-haft be carefully introduced between the bark and wood, entering it where the horizonta and longitudinal incisions unite, and gently raise the bark sliding the knife along at the same time. Let the opposide side of the bark incision be operated upon in the same way. Scooping out a sheath of bark containing a bud comes next to be considered. This ought to be performed by a single cut of the knife, inserting the knife about $\frac{1}{2}$ in. below the bud, guiding it inwards and upwards until the edge is opposite the bud, when the knife must take an outward course, sloping the cut at top into a similar form to the one below the bud. The extraction of the wood which fills the sheath of bark thus formed requires care to prevent extracting the core of the bud along with the wood; but, to lessen this danger, cut off the sheath with as thin a body of wood in it as possible, allowing sufficient margin of bark on each side of the bud. Remove the wood out of the sheath by an easy twitch. Having inserted the point of the knife between the bark and wood, insert the bud by raising one side of the bark by means of the knife-haft and the thumb, placing the sheath parallel with the lengthened cut, then gently put in the sheath until the bud is neatly placed; the bark on the opposite side should be treated in a similar way. The bud adjusted, hold it in position with the thumb, draw the knife through the horizontal cut in the stock, cutting the upper portion of the sheath so that it fits exactly the cross cut in the stock; wrap up the bud with soft matting, being careful to cover the incision, and only allow the bud to peep out. I shall not stay to inquire regarding the different "stocks" recommended by various authorities whose opinions are divided. Some incline to prefer the Manetti, but the great majority are disposed to favour the Dog Rose, which I consider, on the whole, preferable to all others for general budding. All stocks have a tendency to generate stock-shoots more or less, but the Manetti especially, and its excessive vigour of growth is objectionable. If restrained by having weak-growing Roses budded on it, it invariably starts stock-shoots, which, if not soon discovered, have a fatal effect upon the Rose, causing it to dwindle and die. Further, it takes a practised eye to distinguish it from the genuine Rose-shoots when forming part of a mass of growths. The proper time to collect stocks of the Dog Rose is at the fall of the leaf. It is important to cut away all useless protuberances on the roots, dressing them back to the last fibres rather than allowing them to remain and produce stock-shoots. Plant in rows, after having previously trenched and manured the ground well. Cow manure in a moderately fresh condition should be preferred to all other home manures, and it is desirable not to have too much of manure in immediate contact with the roots; rather have the body of it near the bottom of the trench. The roots will find sufficient food for their immediate wants if a portion of this stimulant be incorporated with the soil. Plants intended to form standards may at once be cut back to the desired height, while those required for dwarfs must be cut back to 6 in. above the ground. In all probability the standards will furnish many growths up their stems; these should all be removed, excepting two or three selected for budding near the upper extremity. Budding ought to be done early in the summer, when it is found that the bark will rise freely, and the shoots from which the buds are taken are in a medium state of maturity. A sunless, mild day is perhaps the best for this operation. Hot, dry weather has a tendency to dry the opening on the stock in which the bud is deposited, besides causing the sheath to shrink unless expertly performed. About a month after budding, when union has been effected between bud and stock, have the wrappings cut, so that no interruption may be made to the swelling of the stems. All buds still dormant must continue to wear their wrappings until a union has been accomplished. In February following let there be a general pruning away of all rank growths on the stocks, cutting them back to a couple of eyes above the buds, which will afford great assistance to them in their first start, and will further materially assist the buds by allowing them to appropriate to their own use food offered through the reviving action of the roots, while at the same time an over-copious rush of sap will be restrained by detaching the vigorous growth of the stocks, whose powerful agency proves more than enough for inactive buds. Ultimately let the remaining part of the shoots be cut off above the buds when the latter have started a few inches.

Soil and Situation.

It is generally agreed by growers that a strong, stiff loam is the most suitable for successful Rose cultivation. Such a soil, resting on a well-drained foundation, the Rose perfectly luxuriates in, if other essential wants are at the same time supplied, the chief requirement being a genial situation—that is, a sunny opening, if possible, sloping gently to the south, protected from winds and draughts from all quarters—in short, neither windy nor shady, neither dry above nor damp below. A proper situation is of more importance than manures, soil, or anything else required. To prove this assertion, I may mention what I have been a witness to in various parts of the country. First, the old favourite Rose Cloth of Gold is well known to be difficult to flower satisfactorily, even where other tender Roses do very well. Some years ago I saw Cloth of Gold hiding a large portion of a south wall with its glorious massive blossoms in a garden called Clotfolach, in Strath Tay; such a sight I never saw before or since produced by this noble Rose. The soil all along Strath Tay is remarkably light, consisting of rotten rock in the main, showing alluvial deposit to some extent, and a large proportion of sand, intermixed with shining mica. Contrasting with the inland situation of this Strath, and very much in its climate, I shall next instance Sutherlandshire. At Golspie, near Dunrobin Castle, the Rose prospers amazingly. Here, with the sea close at hand, may be found the most splendid examples of our popular H.P. and Teas in particular. Every nook and corner about Golspie has its Rose blossoms in profusion. One plant I noted in particular—a Gloire de Dijon, trained on a house-front measuring 21 ft. by 20 ft., a space completely covered by well-trained growths, which were one mass of most magnificent blossoms from top to bottom. There must have been many hundreds of open and half-open blossoms on it when I saw it. In the gardens of Dunrobin the Roses were almost as beautiful as the fountain basins of Nymphæa alba, which leave their impression on the memory of every visitor when seen in flower. The soil in this district is of a comparatively light nature, being much mixed up with sand and large particles of grey granite.

Preparation of the Ground.

Supposing one is about to prepare a bed or border for Roses where the soil happens to be "stiffish loam," I think it would be bad judgment to apply as manure any compound of an adhesive description; for such soil the manure ought to have a contrary tendency, and at the same time unite the necessary stimulating element—such substances as stable manure, sand, leaf-mould, and lime-rubbish incorporated, and allowed to remain for some months before using. On the other hand, for soil naturally poor and light, the compound may be composed of cow-manure, old night-soil, and fresh stiff loam containing as much fibre as possible. These, with a liberal supply of liquid manure laid in a heap for a time, make splendid material for Roses when grown on light ground. In any soil the Rose is a greedy feeder, and demands annual manuring. In making a Rose garden, if the subsoil be at all stiff and retentive of water, it ought first to be properly drained, conveying the water to some distance by a main drain. Should the subsoil be sandy and gravelly, and drainage already exist—unless, as sometimes happens, there are springs which require to be drawn off artificially, thus preventing them from over-sopping the soil, in which case after draining and allowing time to draw off the superfluous damp—the ground may be well trenched, depositing at the bottom of the trench a good store of prepared compost, besides mixing the overlying body of soil with goodly portions of the same material; as the trenching process goes on, heap the surface into deep rough ridges, and leave it in that state all the winter, that it may be properly pulverised by the united action of frost, wind, and rain. Again, in March, previous to planting, let the ground be partially trenched, after a top-dressing of wood-ashes or burned clay should it be adhesive. Top-dress the light soil with the compost recommended as a suitable manure for its kind. The ground is now in readiness to receive the plants. Planting may be proceeded with; and as to the distance to place one plant from the other in the rows that depends much upon the vigour or delicate nature of the respective kinds—some require 15 in. or less between, others as much as 3 ft. The habit of the plant should be understood as nearly as possible before its situation in the bed is fixed.

Pruning.

I believe most of us have much to learn as regards pruning Roses, scarcely a dozen kinds are alike in vigour or require the same amount of pruning. Out of a collection some are improved by close-pruning, other flourish best with scarcely any. The rule ought to be to cut weak growers more closely back than vigorous ones; for instance, Tea Roses, Bourbons, Chinese, and Noisettes all suffer by too close pruning; and, on the other hand, many of the Hybrid Perpetuals are improved by close pruning. By practice alone we can judge how best to use the knife; however, this ought at all times to be conducted with an eye to the regularity of form and the natural habit of the variety acted upon. The proper time to prune is rather a disputed subject. Some prefer the autumn, but I think the majority—and rightly, too—advocate spring pruning. In ordinary seasons I consider the beginning of March quite soon enough, and indeed, too soon in such a season as the last. The Rose suffers much by late spring frosts, and even the blighting winds of early spring when there is no frost. Further, regarding late pruning, a number of years ago, when I was in the Highlands, I had in charge a number of very old, large, and fine standard Roses growing in the flower garden. Unfortunately, the season of Roses was always past before the family came there to reside. These standards were pruned back somewhat in early March along with the early Roses, and all commenced an early and rapid growth, which induced me to experiment a little. With the object of having these standards come into bloom in the middle of August, instead of July, I had them all pruned back to dormant eyes in the hard wood in the latter end of April. For some time afterwards they looked very scrubby besides those at their base covered with promising shoots; but, ultimately, I was well repaid for my experiment, for we had quantites of grand Roses in August and September that year from these giant standard heads.

Disbudding.

This is most important if pursued systematically both as regards blooms and wood-buds, which latter in no small degree obviates the removal of what would subsequently form hurtful growth. Disbudding ought to be conducted with an eye to a symmetrical outline in the plant, thinning out all that are likely to prove useless, and preventing the free action of air and light throughout the body of the tree, which is essential to health, cleanliness, and proper ripening of the wood. Very rank growths ought to be removed when first discovered amongst others, seeing their tendency is to rob them of their share of sap, making them thin and weak, if not worthless, besides spoiling the order and regularity of the plant. Pegging down the shoots of dwarf Roses, more especially when growing on their own roots, is a vast improvement on the usual mode of conducting growth; this I experienced some years ago. For the sake of experiment I had a large bed, which centred a portion of a flower garden, planted with sixty of our most popular H. P.'s and some of the hardiest Tea Roses. This bed was trenched 4 ft. deep early in March, and highly enriched by turf and stable manure; indeed, in a similar way to that in which one would prepare soil for bench potting. The Roses were then and there planted partially on their sides, the more to facilitate the layering; very little was taken from the length of the previous year's growth, a mulching of short horse manure was spread over the bed, and the shoots were pegged down over the dressing, distributing the growths in such a way as to insure the most regularity over the bed. In all respects this resulted in a perfect success, the Roses were both abundant and good; indeed, some of them prize winners, and the bed was entirely covered with young growth. In the March following the required shoots were layered, and what were not wanted were cut clean away without attempting spurring on that bed.

Insects and Mildew.

These are very destructive, at times defying all our efforts to exterminate them without sacrificing the plants also. Soap-suds form, perhaps, the best remedy against insects and mildew. I have found a constant application of soft soap dissolved in water (at the rate of a piece of soap the size of a hen's egg to a 3-gallon can of water) act effectually, and prove beneficial to the growth of the plants. This I have experienced with pot Roses in particular.

In monstrous growths in Roses, the pistils are developed into leaves in some instances, and in others Rose petals, along with imperfect buds of Roses clustered into a confused mass. The stamens invariably retain their natural character, or are transformed into flower-petals. This is the effect or result of some influence difficult to understand, which it should be our purpose to discover, and, if possible, prevent. In my opinion, the cause of such monstrosities is attributable to the roots being placed on a cold, damp bottom. The plant is excited into growth by the returning heat in the atmosphere after a lengthened state of inactivity; therefore its tendency is to grow, the absence of sufficient sunlight and heat prevents the perfect elaboration of its sap. I am informed by a gentleman, Mr. Scott, of Philadelphia, who has been an extensive cultivator of the Rose, both in and outdoors, for the Philadelphia market for the past thirty years, that he never once saw a green-centred Rose in America during all those years; and he was astonished, on visiting this country this summer, to witness so many existing amongst the very Roses he has been accustomed to grow in America. One thing I feel convinced of—that is, although America is subject to rigorous frosts and long winters, that country has likewise the advantage in heat over a great portion of the year, the effect of which on the Rose will be to ripen root and branch to perfection prior to the occurrence of frost. Further, an American spring is very different from ours—no periods of alternate warmth and biting winds and rains. Spring opens there with sharp frosts at night, but the days are bright and warm, and thus spring grows into summer without alternate checks to vegetation.

I have already entered at some length into the mode of striking cuttings from ripe shoots; let us note what may be accomplished by means of cuttings while they are yet green. These are in a more active state of growth, and when properly handled root quickly, but they must be put into bottom-heat, and kept rather moist at the root. These half-ripened shoots are prepared for insertion in a similar manner to other Rose cuttings. Pans or pots should be used to root them in, and the soil may be composed of two parts light loam, two parts sand, and one part leaf-mould, not too much reduced by age. The cuttings are inserted at regular distances around the edge of the pots, then the central portion is filled with the tallest of the cuttings. After pressing the soil firmly to them, the operation is completed by scattering a handful of sand amongst the cuttings. Store them away in a shaded corner in a cool house, placing a bell-glass over each pot, to prevent the waste of moisture from the soil, and at the same time to exclude air. Allow them to continue thus situated for about three weeks, by which time they will be in a proper state to be put into heat to root. I have practised another method with fair success. This applies to prunings taken from old forced Roses in November. These prunings were treated exactly similar to those last described; but, instead of being put under glasses, they were shelved in an intermediate-house used for bulb forcing, and stood facing the sun until the succeeding spring, when that aspect became too hot for them, and necessitated their removal to cooler quarters. A number of these cuttings bore moderately large blossoms in the latter end of the succeeding summer, so well did that plan succeed.

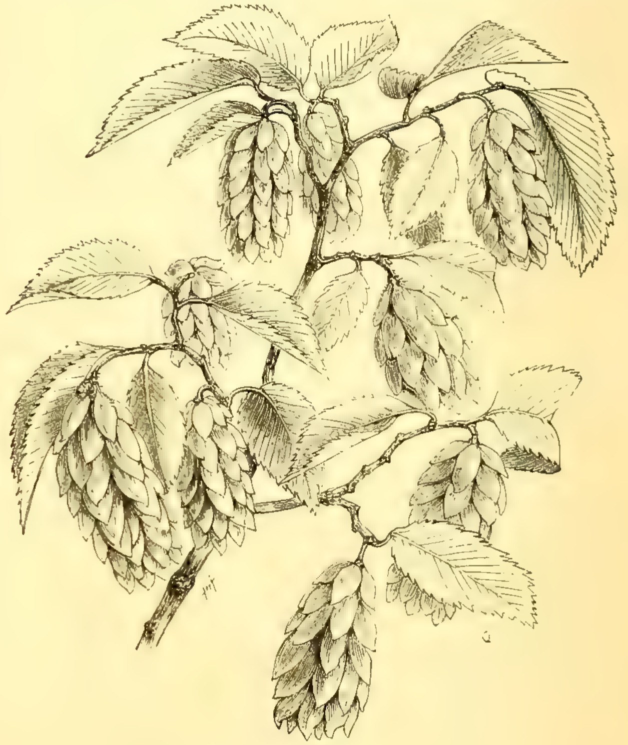
Fungi in Hotbeds.—It is said that the production of fungi in hotbeds may be effectually prevented by putting a layer of wood ashes about two fingers deep between the manure and the soil. The "Allgemeine Hopfen-Zeitung" is responsible for the statement that this method has never been known to fail wherever it has been put in practice.

Tamarinds: a Caution.—Dr. Steele recommends for a summer drink to pour boiling water on the West Indian Tamarind. Some years ago I did so, and my wife and I were immediately attacked with all the symptoms of poisoning, although we had only sparingly partaken of it. A few days after I singularly met with a similar receipt, but with a caution that the stones should first be removed, as they are poisonous. I hope that none of your readers may suffer an experience similar to mine.—"Dietetic Reformer."

TREES AND SHRUBS.

THE HOP HORNBEAMS.

The Hop Hornbeams (Ostrya) are very nearly related to the true Hornbeams (Carpinus). There are but two species, one South European, extending into Western Asia, the other spread over North America. Both are extremely ornamental deciduous trees worthy of much more extended cultivation. The unisexual flowers are produced in separate catkins on the same plant, and develop at the same time as the leaves. The male catkins are long, drooping, made up of a number of small, simple bracts, at the base of each of which are inserted about a dozen irregularly united stamens. The female catkins are short, terminal, with small deciduous bracts; each flower is enclosed in a pair of thin involucral scales, which become enlarged and grow together, so as to form an inflated membranous covering to the fruit. These, being imbricated, afford a very striking resemblance to the cones of the common Hop —hence the name Hop Hornbeam. The pretty, serrated leaves are shed about the same time as those of the common Elm.



Hop Hornbeam (Ostrya vulgaris).

Some confusion seems to exist respecting the differences between the European and the American species. In the "Treasury of Botany" it is stated that the latter chiefly differs in having upright fruit catkins, while the figure given by Michaux certainly represents it with pendulous ones. Wildenow and others describe the European tree as having upright catkins, and on this account separate it from the American, which has drooping catkins. Asa Gray and De Candolle rely much for specific characters on the number of the nerves of the leaves. Karl Koch, the learned author of "Dendrologie," does not, however, attach much importance to this point. It is certain that the two species resemble each other very closely, and it may be that they are mere forms of one. The common Hop Hornbeam (Ostrya vulgaris) is represented in our figure. According to Loudon's "Arboretum et Fruticetum Britannicum," the old tree at Kew is probably the finest in Britain; the measurements given in the work just quoted being—height, 66 ft.; spread of branches, 54 ft.; diameter of trunk, 3 ft. Both this and the next species are usually propagated in this country by grafting, using the common Hornbeam as a stock. Philip Miller cautions his readers against buying grafted plants, which, in his opinion, are short-lived, but the Kew specimen does not bear out this assertion. Although the tree from which the material for our illustration was obtained does not fulfil Wildenow's conditions in having upright catkins, there is no doubt of its identity. The leaves are 3 in. long by 1½ in. broad, and on comparison with several gathered purposely from different specimens of the American species, seem to lend some weight to the distinctive characters given by Asa Gray and De Candolle, in all cases the nerves being more numerous than in O. virginica. The Hop-like female catkins are from 1½ in. to 2 in. in length, the inflated involucres being covered with prurient hairs. A peculiar circumstance connected with this tree is that the withered male catkins often remain attached to the branches for months after all trace of them has disappeared in all the allied genera. This species is quite hardy in the south of England, and is one of the most handsome of all our deciduous trees. It was first cultivated in this country in 1724. The Virginian Hop Hornbeam (Ostrya virginica) is a smaller tree than the preceding, sometimes under favourable conditions attaining a height of 40 ft. From all we can learn it hardly seems to be so hardy as its European congener, which, however, it excels in its rate of growth, although is is a very slow grower. It was first cultivated in English gardens in 1692. In the Eastern United States it is widely distributed, growing here and there in moist fertile woods, never in such numbers as to occupy tracts of land, however small, to the exclusion of other trees. Its wood is exceedingly hard and fine-grained, and is used for mallets, wedges, levers, &c. It is sometimes called Iron wood and Lever wood. G.

Cryptomeria elegans.

Pinus Cembra.—In a recent article on this Pine, the Arolla or Swiss Stone Pine, it is said that when old it assumes the tabular form of the P. Pinea, or true Stone Pine. This is not so; of many thousands which I have seen in their native woods, I have never found one which, except by injury or accident, varied from the closely conical outline characteristic of the species. It is not a Pine which should be planted in this country for ornament; P. monticola, P. Strobus, and P. excelsa are far more beautiful and nearly akin to it, but from its extreme hardiness it is well suited for close planting on high, exposed land. — Salmoniceps.

A New Late-flowering Magnolia.—In the "Gardeners' Monthly" for July, an interesting notice was given of Magnolia Halleana and Thurberi—comparatively new varieties that were brought from Japan fifteen years ago by Dr. Hall. The hardiness of these Magnolias is unquestionable and unsurpassed, having been tested these many years in the various nurseries at Flushing, and by hundreds of persons in all parts of the country to whom they have been sold. It is gratifying to learn that so valuable a variety as Magnolia Thurberi can bloom, since never before, to our knowledge, has a single flower appeared in America. In all probability, mature age is necessary in this case, to produce wood suitable for flowering. My main object, however, is to call attention to another variety, or, perhaps, species, Magnolia hypoleuca, which deserves consideration, not only for beauty, but extreme rarity, never having been offered for sale in America, nor as far as I know, in Europe. The merit of this variety lies chiefly in the great beauty of its milk-white flowers, which resemble those of conspicua, and possess a delicious Banana-like odour, surpassing that of any other hardy Magnolia. Bright and ttractive in foliage, the underside of the leaf is greenish-white, whence the name. Hypoleuca is quite hardy, having been grown a dozen years or more in New York City by Mr. Thomas Hogg. The bloom appears about the middle of June. Specimens of the flowers were exhibited by Mr. Hogg at the June exhibition of the New York Horticultural Society. Messrs. Parsons & Sons are in exclusive possession of a considerable stock of this variety, and will soon offer it for sale. They have other new and valuable Magnolias from Japan, obtained through the enterprise of Mr. Hogg, which they propose, as soon as propagated in sufficient quantities, to describe and offer to the trade. All Magnolias are so beautiful and valuable, that any real addition to the list of good kinds should be very interesting to the horticultural public.

CRYPTOMERIA ELEGANS.

Amongst the many ornamental Conifers from Japan, this is, without exception, one of the most beautiful. It is perfectly hardy, and a free grower in almost any kind of soil and situation. The colour of its dense foliage during summer is pale-green, changing in autumn to a purplish tint, and in winter it becomes a bright reddish-brown, particularly so when planted in light soils or dry, porous subsoils, and in airy, sunny situations; but in heavy soils and damp, sunless positions, it does not exhibit its brilliant and lovely colour to such perfection. It sustains no injury from the keenest frosts or the withering influence of prevailing winds; and a deluge of rain only tends to brighten rather than tarnish its colour. When young, it has a tendency to make duplicate leaders, and to throw out straggling lateral branches; these should be pinched back, and, of course, in the case of the leaders, the most central and best formed shoot should be left, so as to form the main stem; it is also inclined to produce suckers, which should, of course, be cut off close into the stem at the base, and if the collar or neck of the plants be kept quite clear of branches for about 6 in. or even more above the ground, it will be an advantage. One more good quality this Cryptomeria possesses, and that is, it is not difficult to transplant, for under any ordinary treatment it rarely fails to grow after being moved. It is said to reach a height of 100 ft. in Japan, where it was discovered in 1863 by Mr. John Gould Veitch. As an ornamental tree, when judiciously placed, it presents a striking contrast to plants of almost any other colour, and, like other Conifers of a decided outline, in which lies much of their beauty, it must have an abundance of room in which to develop its natural shape. It may be added that it is easily increased by means of cuttings.

PRUNING DECIDUOUS SHRUBS.

To facilitate matters as regards pruning, let us arrange the more common ornamental shrubs in four groups, naming each after its most conspicuous member, and then suggest the treatment proper for each. 1. The Diervilla Group. This includes the Weigela (properly Diervilla), Deutzia (single and double), Hydrangea nivea, H. quercifolia, and H. radiata, Kerria (Japan Globe-flower), Philadelphus (Mock Orange or Syringa), Ribes (the ornamental Currants), Spiræa (the shrubby sorts), Symphoricarpus (Snowberry and Indian Currant). All of this group bear flower-buds that will bloom the coming summer, on wood which grew the previous year; hence care should be taken to prune them but lightly, and for symmetry only, cutting out entirely the wood that has already borne flowers. The work should be done in winter or early spring. If performed after flowering, much disfigurement will ensue from the growth of rampant side-shoots. In this group indiscriminate shearing will be sure to remove nearly, if not quite, all the flower-buds. 2. The Hibiscus (often called Althæa) group includes Berberis, Callicarpa (French Mulberry), Colutea (Bladder Senna), Cornus (Dogwood), Elæagnus (Silver Thorn), Hippophœ rhamnoides (Sea Buckthorn), Hydrangea paniculata, Ligustrum, Salix, and Tamarix lonicera (Upright Honeysuckle). Shrubs belonging to this group need strong pruning on account of their vigorous nature. It is best, therefore, during each winter, to cut back the growth of the previous year to within three or four eyes (or buds) of the old wood, always paying due attention to the preservation of the symmetry of the plant. The flowers of this season will appear on wood grown at the time, and will be much larger and more satisfactory than if all the buds had been left on. 3. The Amygdalus (or Flowering Almond) group includes Cytissus (Broom), Daphne Cneorum, Forsythia (Golden Bell), Genista (Whin), Jasminum, Prunus (Flowering Peach and Plum). Although these shrubs, like those of the Weigela group, bear flower-buds on shoots grown during the previous year, they require a different treatment, As they are of slow growth, it is better to remove in summer all of the wood that has just dropped its flowers. This treatment. apparently severe, ensures the development of the most perfect and vigorous wood and flower-buds for the following year. Some species, such as the Flowering Almond or Plum, have a strong tendency to disease, unless treated in the manner here described. Stronger members of the group, however, may require slight modification of treatment. 4. The Syringa (Lilac) group includes Calycanthus, Caragana (Pea tree), Clethra, Coronilla Emerus, Pyrus japonica, Daphne Mezereum, Euonymus (Spindle tree or Burning bush), Exochorda grandiflora, Viburnum (Arrow-wood and Snow-balls). Careful attention to all points here indicated should be given by all who wish their shrubs attractive and finely developed. No pruning whatever is better than indiscriminate clipping; but entire neglect will always in time permit an irregular growth that gives a slovenly appearance to the grounds. In time also the uncut shrubs become crowded with old and superfluous branches, bare of flowers, and, finally, not only do they lose their best charms, but they prove a positive nuisance on account of their untrimmed condition. Of course, only a small number of the desirable shrubs are here enumerated, but any intelligent person, by watching the manner of growth of a shrub, will soon see to which group it belongs. The simple principle that lies at the bottom of all this pruning is to assist the plant to the most perfect and natural development. If curving grace be a marked trait, the knife should seek to prevent all angular growth; if, on the other hand, a regular upright form is characteristic, symmetry in this direction should receive special attention. Here, as elsewhere, education and not coercion should be our aim.—Samuel Parsons, in "Moore's Rural."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Spiræa tomentosa and Thunbergi.—I see it stated in The Garden (see p. 319) that Spiræa tomentosa has white flowers. I enclose a small piece to show you that it has red ones. I never saw a white variety of it. I also enclose a sprig of S. Thunbergi, which I omitted in my list.—George Gordon.

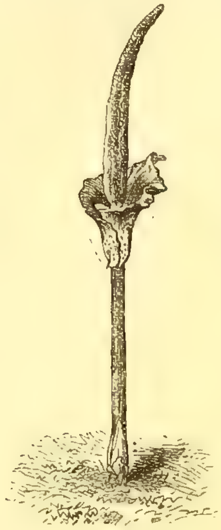
A Wild Cherry Tree in Ireland.—Mr. Balfe, in the "Farmers' Gazette," gives an interesting description of a fine Cherry tree, at Old Conna, near Bray. At 1 ft. from the ground, the circumference of the trunk is 16 ft. 8 in.; at the ground surface considerably more, owing to large, irregular, expansions and excrescences. At 5 ft. from the ground, it branches out, and here the girth is 19 ft. Dr. Moore—who has often admired its huge proportions and picturesque form—stated that in all his wanderings he never met any of its kind at all coming up to the proportions of Mr. Riall's patriarchal Cherry tree.

Sycamore Timber.—The timber of the Sycamore tree (Acer pseudoplatanus) is extensively employed in Lancashire in the construction of the heavy rollers used by calendrers and cloth-finishers, and when of a size suitable for that purpose, 18 in. or more of quarter girth, it is in much demand, and realises good prices. The boles of four moderate-size trees, containing in all 200 cubic ft. of timber, averaging 20 in. in the quarter girth, were lately sold on the Earl of Wilton's estate, of Pilsworth, near Bury, at 2s. 6d. per ft., realising the handsome sum of £25 for the four trees, without taking into account the limbs or large branches, which are used in the manufacture of bobbins, &c., and realize a paying price when sold for that purpose.—"Journal of Forestry."

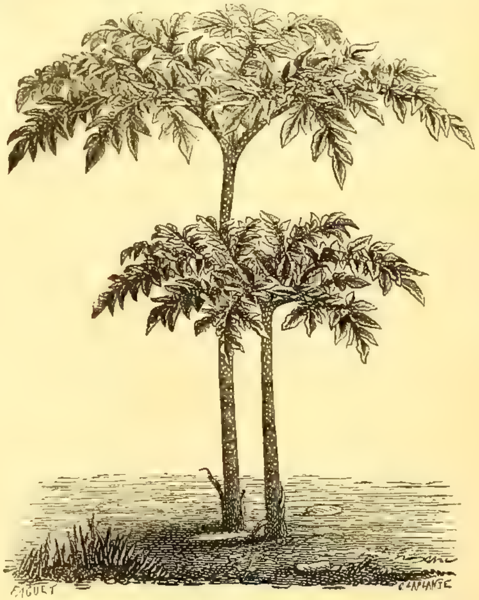
THE FLOWER GARDEN.

AMORPHOPHALLUS RIVIERI.

This curious plant belongs to one of the most remarkable groups in the vegetable kingdom. It is a recent introduction from the Tropics, and is rarely ever seen, owing, I believe, to the fact that it is considered a stove plant, and as such not worth growing; but when grown as a hardy plant, its value for decorative purposes can be easily seen. It can be grown in or out-of-doors in almost any soil or situation, its curious snake-like stems and large, Palm-like foliage rendering it a conspicuous and stately object either in beds, on the rockwork, or mixed with plants of a kindred character. It is an Aroid, producing enormous bulbs which throw up in early spring a stout, erect stem from 2 ft. to 3 ft. in height, terminating with a curious blood-red spadix, partially enveloped in the spathe, which is of a rose colour spotted with green. After it has flowered, the leaf (for there is generally only one) emerges about the beginning of May, and continues to grow at a rapid rate until September, when if strong it will attain a height of 4 ft., and about the same size in diameter. The stem and petioles are of a greenish-purple, spotted and splashed in the most fantastic manner. The foliage is of a deep green colour



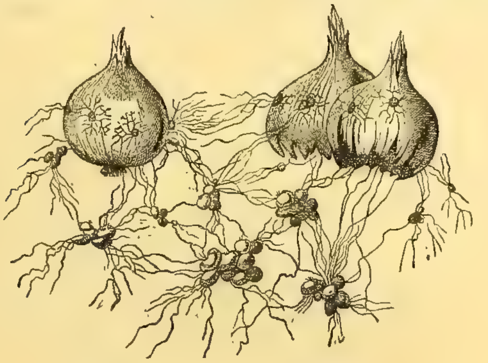
Amorphophallus Rivieri (flower).



Amorphophallus Rivieri.

and slightly ribbed, while a very distinct venation adds to its beauty. It remains in flower until the first frost, which cuts it down, after which it should be taken up and stored in a dry place and protected from frost until the second week in April, when it should be planted out. If the bulb be in vigorous health it will flower in a dry state without being potted, but it would be preferable to pot it in dry soil until the roots make their appearance, which they do from the top not from the bottom of the bulb. I would recommend where possible the potting of the bulbs intended for outside planting in February or March; by so doing the plants attain a greater size much earlier than when planted in open quarters. Any ordinary soil will do, but the richer the soil and warmer the situation, the better will be the development of the plants. A. P.

The Saffron Crocus (Crocus sativus) flowers at this time of year, and not in early spring like the common Crocuses of the garden. The leaves also do not appear until after the flowers have faded. The corm is round and without a furrow, the leaves are 7 in. or 8 in. long, very much narrower than those of Colchicum, being linear, and traversed by a white midrib like those of the spring Crocus. Although the flower is very similar in shape and size to that of the Colchicum, it is easily distinguished by having only three stamens, which are attached to the outer segments of the perianth. There is only one style, 3 in. or 4 in. long, which is thread-like and terminates in three wedge-shaped stigmas, which are notched at the apex. The ovary, which must be looked for quite at the base of the flower-tube, is inferior, *i.e.*, the tube of the perianth does not easily separate from it as in the Colchicum. Although formerly cultivated at Saffron Walden, in Essex, and Hinton, in Cambridgeshire, it has not been grown in England for commercial purposes for nearly a hundred years, and has not only ceased to be found in those localities, but is apparently very rare in botanical gardens, for we have not noticed it in either those of Kew, Regent's Park, or Chelsea. This is perhaps owing to the fact that the flowers, even though artificially fertilised, hardly ever produce seed, a circumstance which has been accounted for by supposing the plant to be a hybrid, or which may be due to long years of cultivation destroying its tendency to ripen seed. Although in scarce seasons much adulterated with the stamens and sometimes with a coloured mixture of honey and chalk, we have never seen either shreds of beef, Safflower, or Marigold petals mixed with it; occasionally, however, fragments of the perianth may be seen, but probably these have only been accidentally mixed with it; the stamens are undoubtedly the most frequent admixture. These, as well as all other adulterations, are easily detected by throwing a little of the Saffron into cold water, when anything that differs in character from the tripartite stigma will easily be recognised.—"Pharmaceutical Journal." [Field mice often injure Saffron bulbs, which also suffer from several diseases. Of these, one is a kind of fungus, which, when it does not absolutely destroy the bulbs, greatly diminishes their produce. Another disease is a spot which is at first red, then yellowish, and then black, which penetrates to the centre of the bulb, and destroys it. For this the only cure is cutting it out immediately it is perceived. There is still another disease worse than either of the two just mentioned, Of this, which is very fatal, the accompanying woodcut is an illustration. It consists of a red-coloured fungus, which spreads in every direction, and soon takes possession of the whole plantation. It makes its appearance in spring, and, if allowed to get established, the only thing that can be done is to abandon the infected field, and to plant no more Saffron there for some fifteen or twenty years.]



Saffron Bulbs attacked by Fungus.

IS LILIUM CANDIDUM AN EVERGREEN?

In "F. W. B.'s" interesting articles on "Lily Bulbs," he remarked (see p. 134, Feb. 17), that this Lily is the only evergreen Lily we have. To this I ventured to object, saying (see p. 261, March 31):—"We have another proof of the continued vigour of the new bulb in L. candidum. In the autumn, while the old stem is dying down and perishing, the new bulb is pushing up above ground a cluster of leaves, which continue fresh and green during the winter. This has given rise to the mistaken idea that L. candidum is evergreen; it is, however, no more evergreen than any other Lily." To this "F. W. B." replied (see p. 268):—"'Dunedin,' again, asserts that L. candidum is no more an evergreen than any other species, whereas the reverse of this is a well-known fact to every Lily grower, seeing that the plant bears green leaves nearly all the year." Now, as "F. W. B.'s" object, as well as every Lily grower's, is, or ought to be, I presume, the same as mine, namely, a desire to arrive at the truth, permit me to add a few words to what I said in several letters at that time. In continuation of my experimental researches, I lifted several clumps of the White or Candidum Lily, on Saturday, 30th June last, when they were in full bloom. Among the bulbs I found some very interesting specimens, but as I had to leave home on the following Monday for six or seven weeks, I placed them in a basket in my tool-house for further examination. I may here, however, add, that when I lifted them on June 30 I found that the new bulbs were, in general, somewhat larger than an extra-sized duck's-egg, and that, in their growth, they had pushed open, or apart, the scales of the old, or parent bulbs, which were then beginning to show signs of decay. On my return home, towards the latter end of August, I opened the basket and took out the bulbs. Amongst them I found one which instantly struck me as being a more than ordinary interesting specimen. It was somewhat similar to the one I described in my paper of March 31 (see p. 260), and which I called "twin bulbs," as they had sprung from the same source, that is, from one and the same parent bulb. Considering that these twin-bulbs had been taken up while the parent bulb was in full bloom, and that they had been out of the ground more than six weeks, they were in very good condition; the parent bulb itself had, however, much decayed. This I expected, for as the parent bulb had bloomed once—all that Nature requires—nothing remained for it but to decay and die.

On studying the appearance of this particular specimen, it occurred to me that I might be able to produce a proof, that would be satisfactory to "F. W. B." and other Lily growers, that L. candidum is not in reality an evergreen. I, therefore, at the end of August, put this specimen into the ground once more, and, in about a fortnight after, I was rewarded by seeing *two* separate and distinct tufts of greeen leaves shooting up above the ground. Allowing them to grow for another fortnight, I again took them up, and now, after having submitted them for the inspection of a few Lily-growing friends, I send them to you, considering that The Garden has readers who may be glad of some authoritative information on the subject. On looking at what I have sent, you will see that the green leaves do not emanate from the old, or parent bulb; in fact, they have no connection with it; on the contrary, they spring from the two new bulbs, which had no existence, even in embryo, twelve months before the parent bulb began to bloom. The parent bulb itself, with its roots, has been for some time, to all intents and purposes, dead or dying—incapable of producing a single green leaf. It has done all that Nature destined it to do—that is, it has bloomed once, like other Lily bulbs, for, as I reared it, I know that it never bloomed before. The flower-stem of the parent bulb, though now withered, still stands between the twin bulbs, and the remains of the old scales are pushed away right and left, as if they were—and rightly, too—of no further use. The fresh roots will be seen to spring from the new bulbs; the roots of the old bulb are, like the scales, either dead or dying. So far, indeed, from "seeing that the plant bears green leaves nearly all the year," we see the very reverse, for we see that in this, as in all other cases, vitality has left the parent bulbs after only one flowering season, leaving to legitimate successors—that is, the new bulbs which spring from within the parent bulbs—the important function of yearly reproducing, with liberal culture, larger successional bulbs, and, consequently, a more gorgeous display of their lovely and stately bloom.

We have another fallacy to contend with, and that is what is called the "dormant" season. What is thought by some to be dormancy is, in reality, decay and death. A Lily bulb is never dormant. From the instant the seed-bud is generated until it has bloomed, its growth is always increasing, more and more, according to circumstances. This is easily proved by taking up bulbs every month, winter and summer, and dissecting them. When the old, or parent bulb, has bloomed, and the foliage is beginning to wither, vitality has ceased to operate, and decay has taken its place. The new bulb has now received all the nourishment the parent bulb is capable of supplying; consequently, this is the best time, with all Lilies, for transplanting the new bulbs. October is said to be the best month for planting; but it is wrong to consider this as a general rule. The White Lily, for instance, should be replanted two months before this time, that is, before the green tufts of leaves begin to appear above the ground. If replanted in October, these tufts are generally 6 in. or 8 in. high, and are therefore apt to flag and die down; or, if they do not entirely fade away, the flowering and the foliage next season will be weak and sickly, lasting but a very short time. There are other Lilies which, if we desire to transplant them without a check, should be lifted and replanted in August and September rather than in October. It is wrong, as a rule, and damaging to many Lily bulbs, to wait until the end of October before they are taken up, to wait until they are, erroneously, called ripe or matured. It is a well-known fact, that Lilies do not all bloom at the same time. When the aboveground parts of a Lily are fading and dying down, the underground parts, that is, the old bulb and its roots, are also fading and dying. This is Nature's doings. Care nothing for the old roots, for they have done their duty; but take great care of the young roots of the new bulb. If not transplanted as soon as the parent bulb has ceased to convey nourishment (and this is known by the aboveground fading of the plant) the young roots will multiply and get strong, and if not moved before this time a serious check must be the result. The more advanced portion of the roots will decay and die, and time will be required to produce a succession, less vigorous, of course, and, consequently, very deteriorating to the bloom of the next season. DUNEDIN.

Clematis and Canary Creeper Combined.—In an old-fashioned garden in the country, I saw, during the past summer, one of the most charming combinations of climbing plants that has yet come under my notice. It consisted of the well-known Clematis Jackmanni and Tropæolum canariense, better known as the Canary Creeper. In the garden in question was a rustic trellis, which, for some years past, has been devoted to the Clematis here mentioned, and one or two other dark blue varieties, and this season seed of the Tropæolum was sown at the foot of the trellis. The Tropæolum was allowed to intermix with the Clematis, and the result was a glorious display of the richly coloured flowers of the latter set in a groundwork of the light green leafage and golden flowers of the former. In the same garden I saw this Tropæolum most effectively employed in the embellishment of a mixed border. At a distance of 8 ft. or so apart, rustic trellises were formed with Pea sticks about 4 ft. in height, and the growth was allowed to run naturally over the branches. In the formation of these trellises, rather stout sticks were used, and the small spray cut back, so that the growth could be held up firmly and present some degree of regularity. About four sticks were employed in the formation of each trellis, and they were inserted rather closely together, the tops being allowed to spread out somewhat. The soil, in which they were growing was in good heart, and as well-established plants that had been raised in frames were put out in preference to sowing the seed, the trellisses were, at a very early period, covered with foliage and flowers, the effect of which was exceedingly good.—"Gardeners' Magazine."

Collomia grandiflora in Germany.—It appears from a communication made to the Brandenburg Society of Botanists, that Collomia grandiflora, a North American plant, is thoroughly naturalised and exceedingly abundant in some parts of Germany. In very stony places it grows only 2 in. to 6 in. high, and these plants bear exclusively cleistogamic flowers—that is, small, closed flowers without petals, in which self-fertilization must take place. Where they are stronger, they bear both small closed flowers and ordinary open ones, or only the latter.

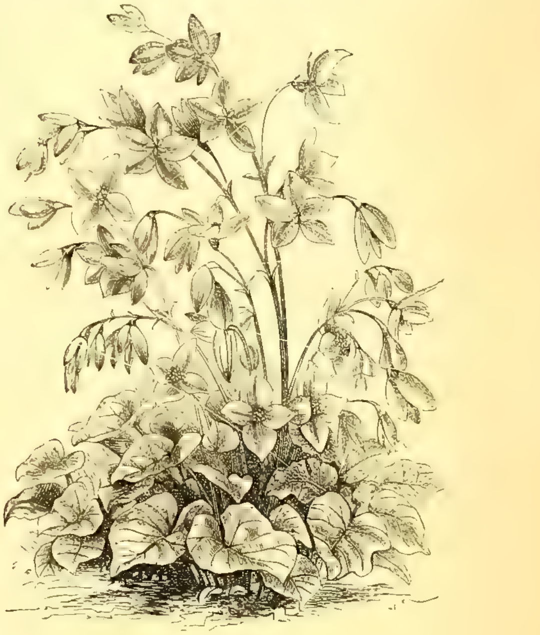
PLATE XCVI.

FRŒBEL'S BEGONIA.

(B. FRŒBELI).

Drawn by MRS. DUFFIELD.

THIS fine and distinct species of tuberous-rooted Begonia was first introduced to European gardens from its native country, the Republic of Ecuador, about the year 1872-3 by M. Otto Frœbel, of the Newmunster Nurseries, Zurich, to whom tubers were sent by the well-known collector, M. Rœzl. It was named B. Frœbeli, in compliment to the introducer, by Prof. Decandolle, of Paris, to whom the plant was submitted immediately on its flowering for the first time in Europe. It has been described and advertised as a rival to the Scarlet Pelargonium for summer bedding purposes, but this it can never in any sense be, as its natural period for commencing to start into growth is from the end of September to the middle of October, and it commences to open its brilliant scarlet blossoms about the middle of the latter month. It will, however, be found to brighten the conservatory during the greater part of the three following dull winter months, when, owing to the great scarcity of other brilliantly-coloured flowers, it is likely to prove a most acceptable and valuable acquisition. The foliage of this plant varies considerably in the case of different specimens, some being covered with purplish, velvety hiars, and resembling the foliage of a Gesnera, while others have leaves of a much lighter shade of green, and almost devoid of hairs. There is also considerable variation in the depth of shade of the scarlet of the blooms, some being of a clear, intense scarlet throughout the entire flower, while others are a much lighter shade, sometimes amounting to almost a whitish appearance towards the centre of the flower. This plant produces seeds very freely, and the seed seems to germinate easily, the seedlings blooming towards the end of the first year of their existence, a great additional merit as regards this plant. As companions to this variety should also be grown, for the decoration of the winter conservatory, the two other specific varieties of late-blooming Begonias, also introduced by M. Frœbel, and named respectively B. octopetala and B. octopetala rosea, the latter of which seems, as yet, to be rather scarce in our gardens, but which I hope to bloom a little later on in the season. It is an extremely vigorous grower, with large and handsome foliage with woolly stems, and marked with purple, somewhat like the leaves of the Podophyllum Emodi; the green ground colour of the leaf is also of a much deeper shade than in the ordinary B. octopetala. I do not



Begonia Frœbeli.

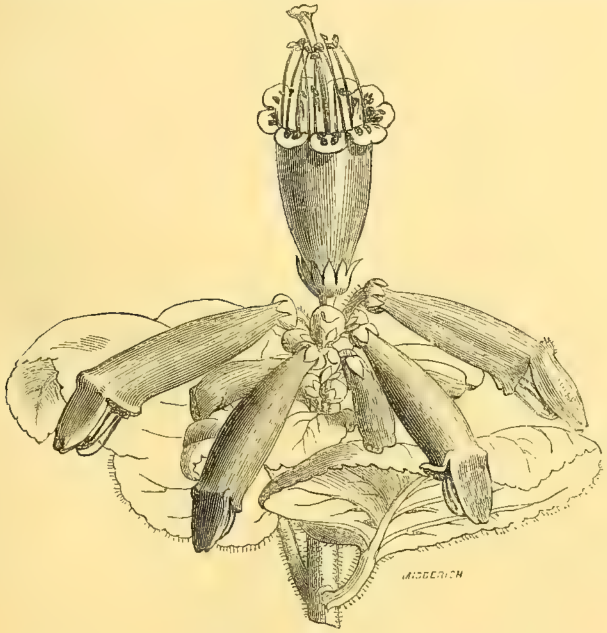
think the proper treatment of this plant is yet by any means perfectly understood, as where really well bloomed, with twenty or more flowers on a spike, as described by "J. T. P." (see p. 425, Vol. X. of The Garden), it must be a really ornamental and beautiful plant, and all the more valuable on account of the late season at which it blooms. W. E. G.

Our plate was prepared from a plant furnished by Mrs. Dixon, of the Amhurst Nursery, Hackney.

THE INDOOR GARDEN.

DIRCÆA REFULGENS ANOMALA.

We have sought in vain for a botanical description of the species from which our figure represents an interesting deviation. Dircæa refulgens was mentioned in Van Houtte's catalogues for 1875-6, but this year it is not included. It is probably a native of Brazil. The genus was separated from Gesnera by Decaisne, and founded on account of the greatly-developed upper lip of the corolla, which partially closes the entrance to the flower. There are but few species, perhaps only four besides D. refulgens. All, though very well worth a place in any stove or warm greenhouse, are very rarely met with in gardens. We are, however, largely indebted to the natural Order Gesneraceæ, Achimenes, Gesnera, Gloxinia, and Streptocarpus being among the more familiar genera. Our present plant has a stout, hairy stem, from 1 ft. to 1½ ft. high, with roundish leaves of great substance, borne on short thick petioles. The bright scarlet flowers are freely produced on vigorous specimens, and are extremely handsome and showy. The deviation from the type consists in the regularity and position of one or more of the flowers, as in our drawing, where the central one is perfectly erect and exhibits nothing of the irregularity in the form of the corolla which distinguishes its normal state. These queer flowers perfect seed freely, and if the seedlings raised from them possess the peculiarity of the parent, possibly some of our readers may soon have an opportunity of judging the merits of the plant for themselves. Any light, rich soil will suit it, and cuttings are easily struck in heat under a glass. It may also be propagated by the tubers, which must be kept dry during the season of rest. Any one who can manage a Gesnera can also grow this. We may remark that anomalous flowers are of frequent occurrence in allied genera.



Dircæa refulgens anomala.

Seedling Gloxinias.—I find these to be invaluable about this time of the year, when flowering stove plants in a good many places are scarce. From seed sown early in March we have sixty or seventy plants in 5-in. pots, with from six to twelve beautifully-coloured blooms on each, and several more showing, which will keep up a display of flower well into November. I also find them very useful in little vases for table decoration when low plants are required. Few flowering plants look so well under candle-light as Gloxinias when in good leafage and flower.—W. W., *Eaglehurst.*

PROPAGATING LAPAGERIAS.

These are generally propagated by means of layers, but the demand for the white variety, which is still sold at high prices, has induced raisers to try more expeditious plans of propagation; and we saw lately some 600 plants of it that had been raised from eyes; layering is, however, perhaps the safest plan. The shoots of the previous season are simply bent down around the parent plant, and pegged on a bed of peat and sand and covered over, leaving the point of the layer above the soil. Roots are formed at the joints, and several plants sometimes spring from the same shoot, springing up like Vine eyes; but the points of the shoots usually make the strongest plants. The plants of the white kind which we saw had, however, been propagated rather differently, for the ripened shoots of last year's growth had been entirely severed from the parent plant, and pegged firmly their whole length on a thin bed of peat and sand, and covered over with silver sand about half-an-inch deep, the leaf at each joint being kept for the most part above the surface, so that all that one saw of the shoot when the work was finished was just a row of leaf points sticking up above the sand. This was done early in the season, and a short time ago the young plants from the shoots so laid amounted to hundreds, the value of which represented a large sum. We noticed, however, that every eye had not produced a plant, and we were told that it was important in adopting this plan to select well-ripened shoots with good foliage, as the vitality and strength of each bud depend upon the leaf. Another plan, which we have been assured is equally, if not more successful, is to cut off the best ripened shoots, and coil and peg them on peat in a shallow pan, covering the shoots over with sand also as described above, and placing them in bottom-heat, keeping them continually moist till they throw shoots and begin to root, when they may be removed to cooler quarters. This, it will be seen is simply a modification of the plan of striking Vines from eyes; but, as we have said before, it does not insure the breaking of all the eyes along each shoot, and it seems almost worth while to cut the eyes up singly like Vine eyes, with a leaf to each, and plant them in the same way, so as to insure a plant from any bud. It can hardly be doubted, if the buried shoots strike at the joints and produce plants, that single eyes would strike also; but, of course, the propagator would need to be more particular in securing a good leaf to each bud. We find that the Lapageria, when established, grows and flowers best in good loam and sand, with a little peat added to it; but it is not particular, for it is an extraordinary rooter, if it has room and light and a cool house. When the Lapageria is propagated by seed—a plan not to be recommended, except for the purpose of raising new and better varieties—the seed should be sown as soon as ripe in a pan of fine soil, covered with a pane of glass, placed in a gentle heat, and kept moist. When the plant is grown in a light situation, it seeds pretty freely, but the earliest flowers should be selected for seed, in order that the fruit may be matured during the best season of the year. The natural flowering season of the plant is autumn and winter, but the flowers are produced plentifully in spring also, when fertilization is most likely to be successful. J. S.

Hypericum patulum.—The St. John's-wort which I mentioned as having seen at the Comely Bank Nurseries, and which I mistook for H. patulum, proves to be, as far as Mr. Fraser can make out, H. oblongifolium. Moreover, it is not a tall bush 5 ft. high, as I thought. The mistake occurred from the fact that a bush of the "Duke of Argyll's Tea tree" was growing out of the clump of St. John's-wort, which is not more than 2 ft. high. It is a very ornamental species, equally so with and closely resembling H. patulum, which I have since seen in flower at the Lawson Company's Nurseries. Hypericum nepalense, of which the writer of the article on St. John's-worts speaks somewhat disparagingly, makes an exceedingly choice wall shrub, with delicate foliage and pretty flowers.—Salmoniceps.

Jasminum Sambac.—I have a plant of this covering about 8 ft. square of the roof of a stove, and it is now literally covered with its orange-like buds and flowers, which fill the place with fragrance. Where button-hole and other bouquets are in request, this Jasmine will be found most useful.—W. W., *Eaglehurst.*

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Insects.—Where plants are grown in pots or similar contrivances, as must, for the most part, be the case when they are under glass, continuous war must be waged against insects; for it must be borne in mind that where they are allowed to become seriously infested with such parasites, it is impossible that their cultivation can be carried out with either pleasure or profit. The labour entailed in the destruction of insect pests is often such as to involve a considerable percentage of that which is required for the cultivation of the plants collectively. This is a matter that I have often found great difficulty in sufficiently impressing upon amateurs in their first attempts at gardening; sowing, cutting, striking, potting, watering, and training are operations the necessity for which is easily understood; but the continual close observation and incessant crusade against insect marauders, indispensable to success, is such that none but those who have had considerable experience can fully realise. There is no season of the year wherein it is so essential to make a successful onslaught upon the whole species of insects that infest plants as the present, when their slower increase, consequent upon the lower temperature and the lessened vitality which they possess through the dormant period now commenced, renders them more easy of destruction. In addition to this, most plants, having made and solidified their season's growth, are in a condition to bear without injury the applications necessary to kill the insects with which they may be infested. This particularly applies to mealy bug and the different varieties of scale insects. Camellias, more than most plants, are subject to the attacks of the latter, including both the white and brown species, and to the presence of these may frequently be attributed the unsatisfactory state in which amateurs' Camellias are often seen. Of the two, the white scale is much the most injurious, as well as the most difficult to cope with, where it is allowed to establish itself. In such cases it often causes the partially-developed blooms to drop, and injures the terminal wood-buds to such an extent that they fall out, engendering a debilitated state of the plants, which is often attributed to some other cause. It adheres so closely to all parts on which it gets a footing that it is not easily removed. An ordinary tooth-brush, somewhat softened by use, is one of the best implements for the purpose, but in its use too much force must not be employed, otherwise both buds and leaves will be injured thereby, although they may not show it for some days or weeks afterwards. To carry the work out satisfactorily, it is necessary to get into every crevice and inequality in the bark, as it is in these the scale partially conceals itself. After being removed by a careful use of the brush, the whole of the wood and leaves should be well washed with a sponge and soapy water, which will free the plants from any of the small fry that may have escaped brushing, and will leave the foliage in a clean, glossy condition; if the plants be seriously affected, not so much as a single inch of the wood or leaves should be left unexamined. Brown scale is not nearly so injurious, and for its removal a sponge and soapy water will usually be found sufficient; should thrips or their eggs exist, they will also at the same time be got rid of. Where hard-wooded plants are affected with white scale, it often happens that some of them are unable to bear dressing with a solution strong enough to kill the insects without seriously injuring the foliage. In the case of Cytisus, Habrothamnus, Jasmines, Rhynchospermum jasminoides, Plumbago capensis, Boronias, and similar free-growing subjects that are badly affected, it often becomes necessary to cut them back a considerable distance into the hard wood and then immerse them as far as possible in a strong solution of insecticide; I have found Stevenson's "Abyssinian Mixture" to be the most effectual, and to do the least injury to the plants; but the application must be repeated several times, at intervals of a week or two. Stove plants, upon which that most troublesome of all insects, Mealy Bug, exists, can be more effectually dealt with now than at any other season, as their young shoots and leaves will be getting fully matured. Many troubled with this insect imagine that, when once it gets a footing, it cannot be thoroughly eradicated; but that is not the case where sufficient perseverance is bestowed. No half measures will, however, suffice; on the contrary, every plant in a collection upon which it will live must have their heads either steeped in a vessel sufficiently large to hold enough of the dressing to admit of their complete immersion, or be laid down on their sides and washed with the syringe, turning them round repeatedly, so that the whole surface of both bark and leaves, from the extreme points down to the collars of the plants, is reached. The application, too, should be repeated three or four times, or so long as the slightest trace of either the insects or their eggs can be detected. The "Abyssinian Mixture" will effectually destroy Mealy Bug, and it also possesses the advantage that if it gets into the soil and reaches the roots it will not do the least harm to even those of the most tender plants.

Flower Garden and Lawn.—So long as there is not frost sufficient to destroy bedding plants it is well not to disturb them, for, although the season is too far advanced for them to be very gay with flowers, still whilst they have a fresh green appearance they look better than the bare soil, except in cases in which the beds are filled with small shrubs. If bulbs, such as Hyacinths, Tulips, and Crocuses are to be planted, the summer occupants should, in that case, be cleared off to make way for them; the ground should also be well dug over, especially where it is of a retentive character, as, when well stirred to a moderate depth, it admits of the water percolating more freely through it than it otherwise would do. Soil of this nature will be improved by giving it a liberal dressing of road scrapings, and, still better, pit or river sand mixed with some decomposed vegetable mould. This will also be of benefit to the bulbs, which should be at once planted; for keeping them out of the ground after they should be started into growth has a weakening influence on them. Crocuses and Snowdrops have a fine appearance planted somewhat thinly (say single bulbs 1 ft. or so apart) on outside corners of lawns, where it would not be unsightly to leave the Grass unmown for a few weeks in spring until the leaves of the bulbs had ripened. In no position do these early spring flowers look so well as when they are arranged in this way; Daffodils and other Narcissi may also be similarly treated with advantage. If preference be given to planting any or all of the above more closely together, say a dozen roots in a patch with more Grass space intervening, this can easily be done, but it would involve a little extra labour in mowing and the use of the shears if the Grass be kept cut without interfering with the leaves of the bulbs until they are ready for removal.

Frames.—Pentstemons, Snapdragons, Phloxes, and all plants of a similar character struck from cuttings put in early in the autumn should be occasionally gone over, and any which have failed to root and are decayed should be taken out, otherwise they will affect the others; give them plenty of air by drawing the lights off in the day time during mild weather; but, as these newly struck plants have yet comparatively little root, it is not well to allow them to get frozen; they must not, however, be subjected to any treatment likely to induce a soft, tender condition, or difficulty will be experienced in getting them safely through the winter.

Mushrooms.—For these more manure should now be prepared. An opinion often entertained by those who have not had much experience in the cultivation of this crop is, that the saving of manure for Mushroom growing necessitates a great amount of care in selecting nothing but droppings, and keeping them so as not to allow a drop of rain to reach them; this, however, is unnecessary, though there is no doubt that manure for Mushrooms is all the better for not being subjected to drenching rains, and if it contains an excess of long littery material it is not so suitable; but a slight wetting, or a moderate mixture of short litter does no harm; neither is it by any means necessary to use manure exclusively, for as good crops of Mushrooms are frequently obtained from a mixture of say one-half manure to one-half ordinary loam or road scrapings as from manure alone; when a mixture of this sort is used it is necessary that the material added to the manure be used in a sufficienty dry state, as if too wet it would prevent the manure from attaining a sufficient degree of warmth to start the spawn; consequently where amateurs are not in a position to obtain horse-droppings alone in large enough quantities without incurring considerable trouble and expense, they need not, on that account, be deterred from attempting the growth of Mushrooms. A mixture of this sort is not liable to overheat so as to injure the spawn in the way that manure alone will, and therefore may be made up into a bed without so much turning and preparation as are necessary in the case of manure. Beginners in the cultivation of Mushrooms should not be disheartened through failing in the first instance, as even with the most experienced growers they are more uncertain than most crops. Their growth involves little cost except the labour in preparing the material and making up the beds, as the manure and whatever else is used is available afterwards for all purposes for which manure is needed.

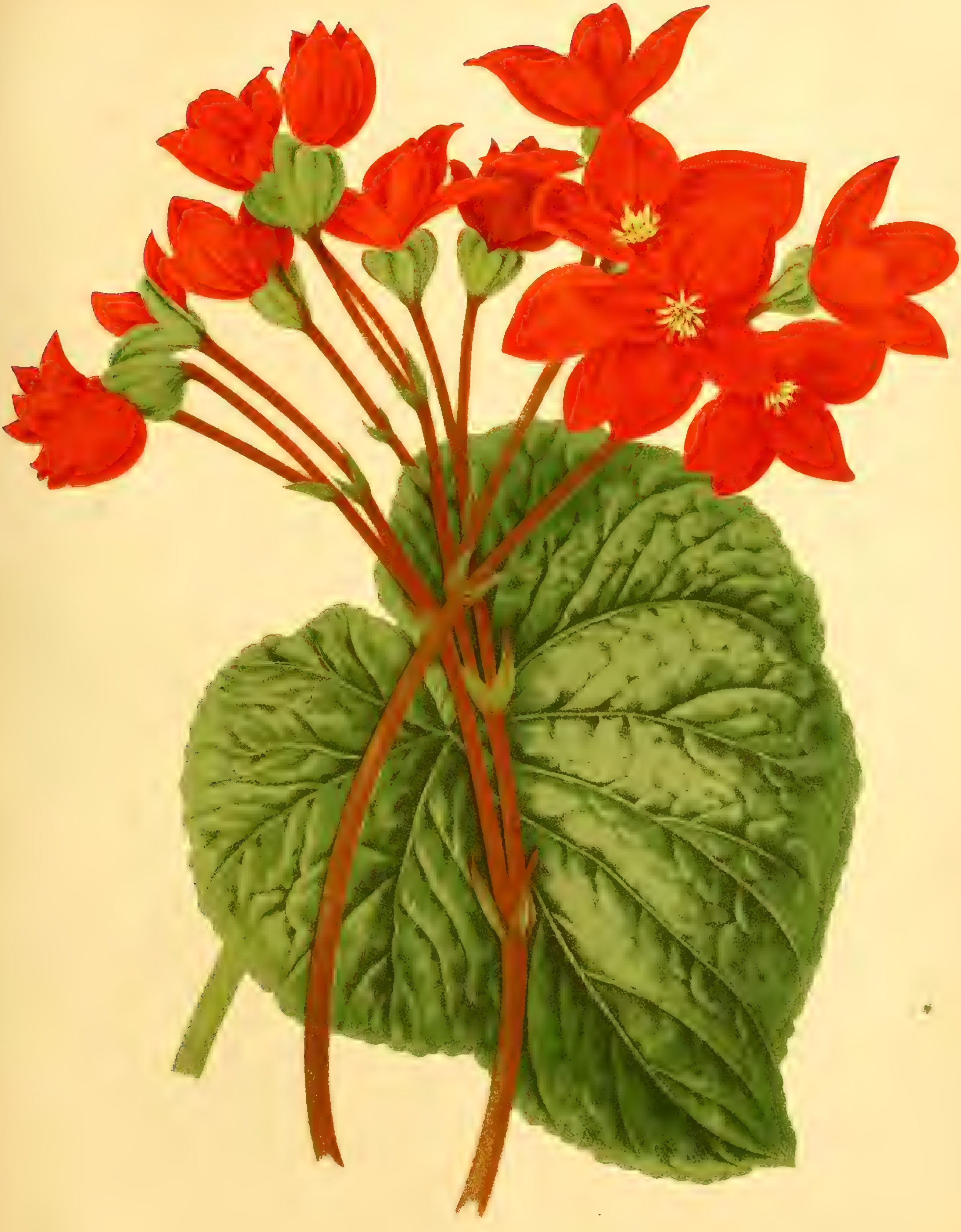
GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

October 22.—Sowing Mustard and Cress. Getting a few Hyacinths into gentle heat. Putting a good covering of leaves and long litter on early Vine border. Pruning Vines in second early Vinery and stripping off all loose bark. Covering up Endive and Lettuces to blanch. Clearing off late Peas, and storing away the best of the sticks for another season.

Oct. 23.—Potting Ashleaf Kidney Potatoes that had been previously started in gentle bottom-heat. Laying down new turf where required, and taking up old where unlevel and relaying it. Cutting back large



FRŒBEL'S BEGONIA (B. FRŒBELI)

deciduous trees where overhanging each other, and lightening the heads, where too heavy, to prevent wind from breaking them. Turning manure for Mushrooms, and gathering in the last of the Apples and Pears.

Oct. 24.—Washing glass and paint in second early Vinery with soft soap and hot water, and painting the Vines with a mixture of sulphur, soft soap, and Tobacco-water, to which a little clay has been added to thicken it. Looking over the fruit-room and arranging it for the winter. Roping Onions, cutting shreds, pointing nails, and making labels and pegs when the weather is wet.

Oct. 25.—Potting clumps of Lily of the Valley, so as to be ready for forcing. Dividing some old Lobelia plants, and putting them in small pots. Earthing up French Beans. Spawning Mushroom bed and moulding it over. Getting up a little Chicory and Dandelion ready for forcing in pots. Rolling down firmly all gravel walks that have been broken up or newly made.

Oct. 26.—Sowing French Beans in pots. Getting up Dahlias and placing them in open sheds to dry. Clearing off dead plants from flower borders, and planting them with spring flowers, viz., Red and Yellow Wallflowers, Silenes, Red and White Daisies, Myosotis, Iberis, Alyssum saxatile, Pansies, and Nemophilas. Earthing up Celery when the soil is dry and in workable condition. Clearing off Lettuce and Endive that are gone too far for use.

Oct. 27.—Potting off cuttings of Hathaway's Excelsior Tomato. Filling frames as they become empty with Lettuce and Endive. Getting bulbs planted, such as Hyacinths, Narcissus, Crocus, Tulips, Snowdrops, &c. Cutting back shrubs in new plantations where growing too closely together, and, where planted too thickly, removing them and filling up gaps elsewhere with them. Fruit in use for dessert—Pines, Grapes, Pears, Apples, and Nuts.

Pæonia Browni.—One of the most strikingly handsome plants, growing in California in a wild state, is this Pæony. I saw it for the first time this spring, and was immediately struck with its great beauty, and have no doubt that when brought into market it will be found one of the most desirable of novelties. Pæonia Browni is, like all other Pæonies, a perennial, the top dying down in winter, and new shoots coming up from the root every spring. It grows about 1 ft. high. The petals, which are very thick, are from five to ten in number, and they vary in size; in colour they are a dark red, the centre of each petal being almost black, the edges shading off to a clearer red. The sepals are about the same size as the petals, and vary in colour from a pure green to a bronze green. The flowers are from 1 in. to 2 in. in diameter, and are always found drooping downwards. Pæonia Browni, though spreading over a great range of station and climate, is never met with in large numbers; a dozen, perhaps, will be found together, and then you might go for fifty miles and not find another. That it will do well in any locality is evident from how it grows wild, being found on the hot plains of Los Angeles and San Diego, and also near the limits of perpetual snow on the Sierra Nevadas. It shws no preference for wet or dry soil, blooming equally well in both.—"Gardeners' Monthly."

THE LIBRARY.

KETTNER'S BOOK OF THE TABLE.*

The author of this book might very well have added to the three adjectives which he has employed upon the title page, to describe its general scope, a number of others, such as witty, humorous, poetical, etymological, archæological, and, above all, delightful, for it can lay claim to the whole of these epithets, particularly to the last. To ourselves and our readers this latest contribution to our knowledge of gastronomy should be especially interesting, seeing that fruit and vegetables receive a large share of the author's attention, a virtue which is exceedingly rare in writers on the subject. The very first paragraph of the book is a gentle remonstrance against the needless multiplication of names in cookery, different authors describing ordinary mixed vegetable soup under nine or ten different names, such as Julienne, Printanier, Jardinière, &c., the ingredients for each being precisely the same, or at any rate differing only according to the season of the year.

The arrangement of the book is alphabetical, the cross-references being as numerous as the convenience of the reader can require. The article on the Apple is an excellent one, and is evidently from the pen of a true Apple lover. The remarks on the necessity for flavouring the cooked Apple with spices, butter, cream, Apricots, Quinces, Cinnamon, the zest (not the peel) of the Orange and Lemon, brown sugar, &c., ought to be reprinted and distributed as a tract amongst those conservative housewives who think that a couple of Cloves and a thick slice or two of Lemon-peel are all that is necessary to bring out the delicate flavour of the fruit.

In treating of Asparagus, the author makes some capital remarks, in which we most heartily concur, on the absurd native custom of using cooked vegetables not as dishes *per se*, but simply as adjuncts to meat or fish, except in the case of Asparagus and Artichokes. The author is inclined to think that this exception is not due to a pure admiration of the vegetables, but to the circumstance that having to be eaten with the fingers, it is necessary to put down the knife and fork in order to seize the vegetables. This may be very true as far as Asparagus and Artichokes go, but the real reason why Peas and Potatoes are never eaten alone in England is because they are, as a rule, simply boiled, and not made into dishes properly so-called. Our author speaks of Dill soup as having been such a favourite dish with William the Conqueror that he created his cook, Tezelin, who invented it, Lord of the Manor of Addington. Most people, we fancy, have only made the acquaintance of the Anethum graveolens in the form of that favourite infantine carminative, Dill-water. The article on Faggots is also good. The author does not refer to those fearful and wonderful but savoury combinations of minced entrails which are sold by thousands every night in Clare Market, Whitechapel, and other poor neighbourhoods, but to those nosegays of different herbs known to the French as *bouquets*. The poorest French woman, when buying the vegetables for her *croûte au pot*, or for the ordinary *pot au feu*, always bargains for her faggot to be thrown in. The Belleville greengrocer who would neglect to supply his customers with a *bouquet* gratis would soon find himself left desolate; it is, in fact, like the milkman's "tilly" in England, and costs the giver just about as much. Faggots are of various kinds; the ordinary French *bouquet* consists of a little bunch of Parsley tied up with a few spring Onions; to the *bouquet garni* a Bay leaf and a sprig of Thyme are added. These two are pretty well known in England, but the Ravigote Faggot is a comparative stranger. It consists of equal portions of Tarragon, Chervil, Burnet, and Chives; minced it forms an excellent garnish for salads of all kinds. Some of the faggots are minced and fried, and consist of Carrots, Onions, Shallots, Bay leaves, Thyme, Mushrooms, Truffles, Garlic, fat bacon, and ham in various proportions, and are greatly used for flavouring soups and sauces. We are obliged merely to glance at the excellent instructions for frying, which apply equally to vegetables and meat. Throwing meat or vegetables into a frying-pan containing a thin layer of melted fat, and heating them till some are burnt and others are grease-soaked is not frying; the frying-kettle ought to contain a sufficient quantity of fat to allow the thing to be fried to be completely immersed in it. What are called "fried Potatoes" in England are cold Potatoes from yesterday's dinner (one half sliced and the other crumbled) heated in a greasy frying-pan until they are partly browned. By this means they become sodden with half-burnt fat, whereas by plunging the raw slices into boiling fat or oil they become covered with a crisp, golden armour, which prevents the absorption of the smallest particle of greasy matter. Under Horseradish there are two excellent receipts for Horseradish sauce. By the way, when will English cooks learn to give us grated Horseradish instead of the stringy scrapings and shavings which are generally served up with our national dish? We cordially join with the author in lamenting the almost total disappearance of that delicious and wholesome condiment Laver, but must express our surprise that he should dismiss such important subjects as Mushrooms and Onions in so few words. Under the heading Pimpernel we receive the salutary warning that Pimpernel is not the English for the French word *Pimprenelle* any more than Primrose is the English for *Primerose*. The French *Pimprenelle* is the garden or salad Burnet (Poterium Sanguisorba), a harmless pot-herb, while the English Pimpernel is the poisonous Anagallis arvensis. Under Pumpkins, Lady Llanover's appreciative account of these useful and ornamental vegetables is quoted, but unluckily no receipts are given for their preparation. Lady Llanover tells us that the only civilized people in England, from the Pumpkin-eating point of view, are the inhabitants of the neighbourhood of Gower, in South Wales, whose cottage ceilings resemble those of the farmhouses of the Abruzzi and Campagna in their wealth of Pumpkins stored for winter use. In the article on Purées a striking contrast is drawn between French *purée de pommes* or *epinards* and the lumpy mashed Potatoes and stringy Spinach which we get in England.

The article on Salad is an essay extending over a dozen pages. The description of the pains the author took to procure a properly mixed salad at a first-rate Piccadilly dining-room, such a salad in fact as would be brought to him as a matter of course at any 20-sous Paris *gargote*, is very amusing. He asked for a salad. The waiter brought a wet Lettuce cut in halves on a flat plate, half-floating in its own water; he next produced an annulated bottle full of the abominable compound called "salad mixture." It was hinted that this horrible concoction was not required, whereupon it was whisked away by the offended waiter, who evidently thought his customer was going to eat his Lettuce with salt like the Turks. He next asked for oil and vinegar and a salad bowl, but there was nothing of the sort in the establishment. It was explained to the waiter that a salad could not be mixed on a flat plate, whereupon he brought successively a soup plate, a slop basin, and lastly, a soup tureen, in which our author prepared his salad *secundum artem.* The extraordinary way in which we neglect the scores of delicious salad herbs growing in our fields is also dwelt upon. Cos Lettuce, Cabbage Lettuce, and occasionally a stray head of Endive are the only salad plants which are commonly obtainable, except at one or two special shops in Covent Garden. Where are the numerous "Sallets," as he writes it, which Evelyn describes with so much *gusto* in his "Acetaria?" The Alisander, the Artichoke, "that noble Thistle," as he justly calls it, Purslane, Lamb's Lettuce, Hop tips, Dandelion, Mallow, Sauce alone, Burnet, which is thought to be so essential to a salad in Italy that it has given rise to a proverb—

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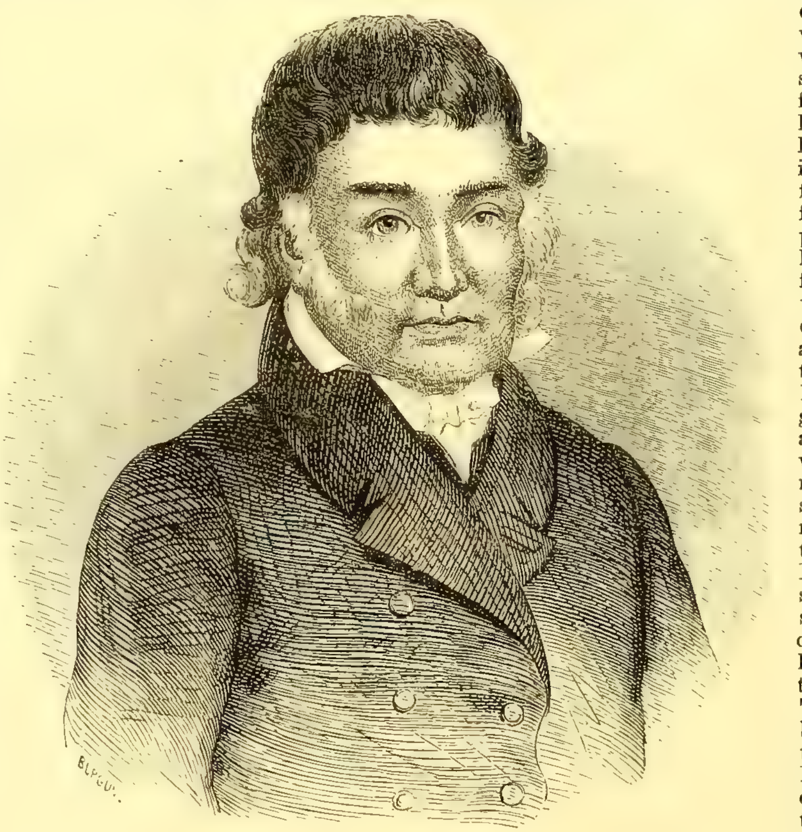
* "Kettner's Book of the Table: a Manual of Cookery—Practical, Theoretical, Historical." London: Dulau & Co. 1877.

> L' insalata non é bella
> Ove non é la Pimpinella.

Borage, Bugloss, Nasturtium leaves, Stonecrop, and a host of other delicious and wholesome salad plants are all neglected, and quite unobtainable through ordinary channels. Tomato salad, too, is almost unknown in England, except to those who have lived in the East or the United States. Potato salad is only to be seen in a few houses, and the *salade de légumes*, which may be obtained in the humblest French restaurant in perfection, is almost unheard of. Under the heading of Sprats, we learn that a friend of the author's once surprised a connoisseur in Roses, who was admiring a splendid show of Maréchal Niels, by informing him that they were all produced by manuring the ground with decaying sprats. With this hint to our sea-side Rose growers we reluctantly take leave of this charming book.

C. W. Q.

Underground Water.—The committee of the British Association for investigating the circulation of underground water in the new red and permian rocks has been re-appointed, and the inquiry extended to the oolites. The secretary, Mr. De Rance, read an elaborate report of the work done by the committee during the last year, and it is evident the association considers the inquiry one of growing importance. Mr. T. Mellard Reade, followed with an individual report upon the wells of south-west Lancashire, in which he analyzed the information he had collected during the last three years, and demonstrated by calculation of the water yielded by certain wells and bore holes, that the yield of a well is dependant upon striking certain fissures or channels which ramify through the sandstone, forming ducts, conveying the underground water to the pumping stations. These ducts, which may be vertical fissures or may be channels along the planes of bedding, like arteries, conveyed the water from large areas of sandstone that have absorbed the rainfall from surface percolation. He also showed that the wells are nearly all affected by local percolation, and insisted on the necessity in most cases of excluding the water from the strata immediately surrounding the well, as it is liable to all sorts of organic contamination, by water-tight cylinders or tubbing.



Van Mons, the Pomologist.

JEAN-BAPTISTE VAN MONS.

This celebrated pomologist, whose portrait well deserves a place in The Garden on account of the good work which he has done in that department of horticulture, was born at Brussels on November 11, 1765, and died at Louvaine on Septemer 6, 1842. At eighteen years of age he entered the service of a chemist at Brussels, and from that time his attention was devoted to the study of chemistry, natural philosophy, botany, and cultivation, especially that of fruit trees. In 1802 he founded at Brussels the "Journal de Chimie et de Physique," and later on he published several scientific works, to which it is unnecessary now to allude, but his labours in these respects did not prevent him from bestowing some attention on pomology. In 1819, however, his nursery at Brussels was required by the Government, and he was called upon to deliver up the ground within the short space of two months, a summons which he strenuously opposed, but at length was compelled to give way. The time was too short for him to transfer his stock without loss to Louvaine, where he was then settled; in fact, he only saved five per cent. of his fruit trees. In 1823 he published a fruit catalogue containing no fewer than 200 new varieties together with descriptions of them, and some account of their parentage. In 1831 some nursery ground which he had acquired at Louvaine was wanted for government purposes, and a second time a large number of his fruit trees were destroyed. He, however, obtained some fresh land, and saved a portion of his collection; but in 1834 his new nursery was taken for a gas factory. Though much depressed by such an accumulation of mishaps, Van Mons was not discouraged; on the contrary, he pursued his labours in the way of culture, and the raising of new kinds of fruit trees with an ardour and perseverance worthy of imitation even at the present day. In 1835 he completed "Les Arbres Fruitiers et leur Culture," a work which attracted much attention. Van Mons was of opinion that varieties of fruits, however good at first, would degenerate with age, and that it was necessary to continually raise new kinds, which he maintained should be the produce of seeds saved from the very best varieties. In this way, by means of successive sowings and careful selection, were obtained the many fine varieties with which his name is associated, and amongst which are the following:—Belle Henriette, Beurré d'Amanlis, Beurré Dumortier, Beurré Navez, Beurré Spence, Beurré Bosc, Colmar d'Aremberg or Fondante de Jaffard, Colmar Nélis or Bonne de Malines, Comte de Flandre, Conseiller de la cour, de Bavay, Délices de Lovenjoul, de Spœlberg, de Brabant, Enfant prodigue, Espérine, Frédéric de Wurtemberg, Van Mons Léon Leclerc, Ne Plus Meuris, Rousselet de Coster, &c. These, it will be seen, comprise some of the best varieties of the present day.

N.

THE FRUIT GARDEN.

CULTURE OF HARDY FRUIT TREES.

The culture of fruit trees in Belgium (a country with quite as bad a climate as our own) is pursued with much success. The methods of culture successful there cannot fail to be instructive to the English cultivator, and, with a view to making these known, we have translated the more essential portions of Mr. F. Burvenich's "La Grande Culture des Arbres Fruitiers, dans les Vergers, les Champs, les Patures, les long des Routes, dans les Cours D'école, aux Façades des Batiments Ruraux." It is a very instructive little work, which deals with fruit-growing in its relation to market supply.

Growing Tall Trees.

In most civilised countries, fruit trees are cultivated on two different systems, which are essentially dissimilar, whether we take into consideration the end to be attained or the means taken to attain it. The first and least important is where fruit is grown on a small scale as a luxury by the wealthy amateur or professional grower; the second and most important is where it is grown on a large scale for sale at a cheap rate in the open market. Under the first system, the improving and perfecting of the fruit cultivated has been the main point arrived at, quality being everything, and quantity merely a secondary consideration; under the second, an abundant supply of fruit of good flavour and fair appearance for sale on a large scale for the general consumer. It is with the latter system that we have more especially to deal. Fruit trees grown in the open air are generally grafted in such a manner that the lower branches are not less than 5 ft. or 6 ft. from the ground. The method of producing such trees may be considered under two heads, the formation of the stock and the formation of the head. To acquire the development necessary for the growth of good fruit, the stocks ought to be produced from good seeds gathered from trees of a vigorous habit of growth. Fruit seeds are used with two objects, either to produce new varieties possessing different properties to those of the parent tree, or else to produce healthy stocks for grafting. Every year we see new varieties produced from seeds, and replacing inferior qualities in the market. Such varieties are liable to degeneration on account of the artificial manner in which they are propagated, so that we have lost a large number of old varieties. Others, again, which at one time were perfectly hardy and thoroughly capable of resisting the inclemency of the weather, and which could be easily grown in an open orchard, must now be grown in well-sheltered gardens, and in soil of the very richest quality. Such varieties as these are unfit for orchard cultivation, and would yield nothing but small, hard, tasteless fruit. A seedling which gives good fruit is a real treasure in an orchard. Seed sowing is generally practised for the sake of producing healthy stocks for subsequent grafting, for which reason little need be said with regard to the choice of seed, except that the parent tree ought to be well-shaped, vigorous, and healthy, and, if possible, a wilding. Although varieties do not reproduce themselve exactly always, there are a few sorts which may be depended on for propagating by seed, and when once they have become large enough to fruit abundantly they appear to act like natural species, and reproduce themselves exactly, such, for instance, as the Pêche d'Oignies, Burgnon de Fêligny, Abricot pêche, &c. If on the other hand, we sow seeds taken from these varieties grafted on a wild stock, the seedling proves quite a distinct sort. It has been found that trees grown from seed without grafting are less liable to the effects of bad weather, and are more fitted to the ground they occupy than being so to speak natives of the soil. They are also generally stronger and healthier than grafted or imported trees. In order to keep the seeds in proper condition they should be well dried, and then mixed with damp sand or mould, the whole being placed in a jar or box, and kept in a cool place or buried in the ground so deep as to be out of the danger of being frozen. By this means the germinating power of the seed is not only preserved, but the moderate dampness by which the seeds are surrounded causes them to swell slightly, so that when sown in the ground they germinate more quickly. Some growers keep the seeds in a thoroughly dry place during the whole of the winter, and soak them for a few days just before sowing time. This method, although serviceable in case of necessity, is, nevertheless, not to be so thoroughly relied upon as that described above. Seeds which have not been properly kept are longer in germinating, often taking a whole year before they give signs of life, or else they do not germinate at all. Trees grown from seeds which have remained too long in the ground are always sickly. The seed should be sown in sand some time early in spring, in a rich soil made into little ridges. The ground where the sowing is to be made should be kept clear of weeds during the summer by covering it with short Grass or manure, half-rotten tan, hop refuse, or dead leaves, which, by their decomposition, enrich the soil. In dry situations shallow trenches, about 4 in. deep, should be made between the paths, as shown in fig. 1. Although spring is most generally recommended as the best time for sowing, it is equally advantageous to sow in November and December, the seeds germinating earlier and more regularly. Mice, rats, and birds may, it is true, prey on the seeds, but this objection applies equally to seed sown in spring. The long-established custom of sowing tree seeds in spring is a mere tradition, and more of a prejudice than a principle. It should be borne in mind that Nature, who ought to be our guide, sows her seeds at the end of the year, and not at the beginning. Sowing on a small scale should be practised on every holding, large or small. To begin with, the seeds of the fruits consumed at the table should be carefully preserved. A bottle or jar half filled with dry sand should be placed on the mantelpiece of the sitting room, and the seeds thrown in from time to time, the sand being well shaken up at every addition. The seeds should be sown one by one in long rows, in shallow drills, at the end of the year or early in the spring, the drills being covered over with short manure. Seed sown in this manner furnish strong stocks for after grafting.

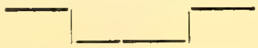


Fig. 1.

First Year.—If the young plants are too crowded they should be thinned out, and about a year after sowing they should be planted out, taking care to choose the healthier-looking and best-formed subjects. Tall, leggy plants should be carefully rejected, as general sturdiness of habit is a necessity, height being a merely secondary consideration. Plants which show a tendency to throw out lateral branches should also be rooted up, such subjects never forming vigorous trees. This remark applies especially to seedlings which are intended to bear fruit without grafting. For this purpose stubby young plants, with smooth, even stems, and without many side branches, should be chosen. When the young seedlings are planted out the side branches should not be pruned, as in so young a subject it would endanger its future health. The tap root only should be cut down to one-half. The best mode of planting out is that shown in fig. 2. The young trees should be planted in rows about 18 in. or 20 in. apart, the distance between the plants being about 15 in. After the lapse of two or three years they should be thinned out so that only the plants marked O are allowed to remain. The others should be re-planted elsewhere in rows, about 2 ft. 6 in. to 3 ft. apart. The young seedlings are allowed to grow in their own way during the first year, care, however, being taken to remove the ends of any of the lateral shoots which appear to injure the main stem by too much luxuriance.

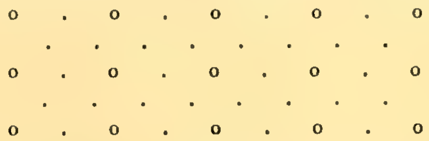


Fig. 2.

Second Year.—During the second year the side shoots should be moderately shortened without cutting them away entirely, because they help the growth of the stem. If any of them prove too vigorous they should be pruned down close to the bark of the main stem, otherwise they will give rise to large scars if pruned down in after years.

Third Year.—If the trees have grown vigorously during the first two years, the third year should be chosen for transplanting them elsewhere, and at the same time of again reducing their tap-roots. From this time the side shoots should be pruned down close to the bark of the stem every year. The pruning of the side branches of the Apple may be commenced earlier than in the case of the Pear, which ought to be allowed to keep its lateral shoots for a year or two longer. The method of pruning the side shoots generally adopted by fruit growers is extremely defective. For fear of making too great a scar the branch is not pruned close enough to the stem, as shown in fig. 3. By not removing the swelling at the point of junction, the wound, although smaller, does not heal so readily. There is no danger in increasing the size of the wound by cutting close to the stem, such wounds healing much more quickly and healthily than those which project from the stem. If we wait until the stem be fully formed before we commence pruning the side shoots, the wounds will be too large, and the trunk will become too knotty, besides being checked in its growth. It may happen that, in spite of all our care, the stem will show a tendency to grow crooked. This must be corrected as gently as possible by means of stakes or wires, as it it an absolute necessity that a perfect fruit tree should have a straight, symmetrical stem. It should, however, be remembered that a tree which has been made straight by training is never so vigorous as one which has required no such artificial aids. If the trees have been properly chosen in the first instance, staking and wiring will be found quite unnecessary.

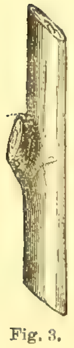


Fig. 3.

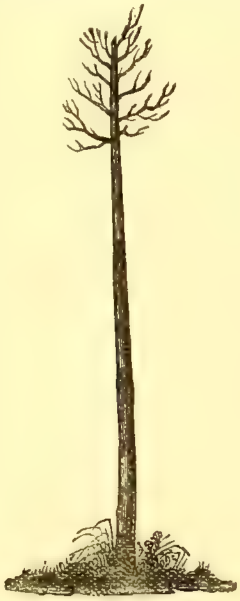


Fig. 4

Fourth and Fifth Year.—By the middle of the fourth or fifth year, the young seedling will have reached the height of 7 ft. or 8 ft. The top shoot should now be pruned down, as shown in fig 4, a few lateral branches being left to form the crown of the future tree. We must now decide whether we shall allow the young seedling to bear its own fruit, or whether we shall use it as a stock for grafting purposes. We shall also have to determine whether we shall leave it where it is for two or three years more before transplanting it to the position which it is to occupy permanently, or whether we shall graft it on the spot before planting it in the situation we intend it to remain in for the rest of its life; the latter method is the best. We may remark that the height of the stem will differ according to circumstances, and that it should be kept as low as possible, other things being equal. It must always be borne in mind that in low and damp localities where a large amount of evaporation is always going on, and in foggy climates, it is advisable to allow the stems to grow taller than those planted under opposite conditions, on farms or roads where there is a free circulation of air. Where fruit trees are intended to be planted in school playgrounds or in open spaces or roads, it is as well to grow them with extra tall stems, in order not to lead unscrupulous fruit lovers into temptation. The same remark applies to trees planted in meadows, where cattle are apt to destroy the young branches. Those trees, which, like the Apple, have pendent branches, should have taller stems than those whose habit is more upright, like the Pear and the Cherry, although the contrary rule seems to be observed in many cases, Pear trees having tall stems, while the branches of the Apple trees sweep the ground. In Holland, where so much of the land is below the level of the sea, the stems of fruit trees are not allowed to grow to a greater height than 5 ft., so as not to reach above the tops of the neighbouring dykes. By this means, they are effectually protected from the sea air, which generally exercises an evil influence on fruit trees. On the other hand, very tall trees are to be avoided, seeing that the higher the tree the more difficult it is to look after, to say nothing of the damage done to the fallen fruit and the difficulty of gathering the crop. In growing Apples, it must be recollected that one of the causes which prevents this valuable tree from holding a proper position in orchards, is the ill-proportioned height of the stem. A glance at almost any of our orchards will be sufficient to show the rarity of a symmetrically-grown Apple tree. We shall also find that the most shapely trees are those which, from one cause or other, are the shortest. The Bellefleur de Brabant Apple tree affords an excellent example of a symmetrically-shaped tree of moderate height, as shown in fig. 5.

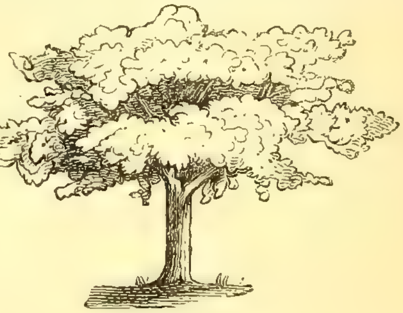


Fig. 5.

Sixth Year.—Although it is not usual to graft trees so early, this operation may be performed on healthy young subjects whose development has been unchecked by adverse circumstances, during the sixth or seventh year of their growth. It must never be lost sight of that it is rarely advantageous to begin to graft before this period, for it must always be borne in mind that the stock develops much more slowly after grafting, and that a healthy crown can never be grown on a weak stem.

Formation of Trees by Double Grafting.

The custom of allowing trees to attain their full growth in the wild state ought to be entirely given up. Both Pear and Apple trees are more easily grown, and produce straighter and more vigorous stems, with a smaller amount of training in the case of the cultivated varieties, than if their wild congeners are used. We are aware that the truth of this principle, which we have always advocated, in accordance with our own experience, has been frequently questioned, possibly because it has been but sparingly adopted by small growers, or else has been misunderstood by them. Orchard trees grown in this manner are lower in stature and more prolific, for the reason that they must be grafted twice. To grow stocks on this system, we must begin by sowing and planting out the varieties required, the wildings being shield-grafted with those kinds which are more distinguished for the rapidity and vigour of their growth than even the wildings themselves. The stocks thus obtained are afterwards grafted a second time with scions of the variety and height we desire. The varieties of Pears recommended for double grafting are Cumberland, Souvenir de Simon Bouvier, and especially the Canada Pear. This latter is a local variety, and is, without doubt, the best for growing strong, straight, and, above all, healthy stocks. At one time the Bezi d'Anthenaise was thought to be the best variety for this purpose, but, as M. Burvenich has proved, the scions grown from the Canada variety are far superior in point of healthy growth. The wood of nearly every variety of Apple grows with sufficient strength and rapidity to form tall stocks; there are some kinds, however, such as the Marais, the Rambour d'Automne, the Rambour Papeleu, and the President Dufays, all excellent varieties for double grafting. Amongst cultivated Plum trees there are several which grow rapidly and yield stocks which are much softer than those of the wild varieties. The Altesse Plum is one of the best kinds for double grafting in the case of Apricot and Peach trees. It is by no means a rare variety, and is found in most orchards. It yields a good fruit for drying, of medium size, oval in shape, and of a blue colour, the stone separating easily from the flesh. The Hazard and the Bavay Green Gage are also valuable for the same purpose. As regards the Wild Cherry, its habit leaves nothing to be desired. If, however, the subjects chosen show a tendency to grow crooked, it is well to graft them low down with the Bigarreau Napoleon, which will soon give a strong, straight stem. One advantage possessed by this method of forming tall stocks by double grafting is, that no matter how crooked, thorny, and knotty the wild subjects may be, they can always be used, provided they are healthy and strong. One year after the double graft, all the young trees, no matter how irregularly they have previously grown, have developed into uniform subjects, similar to that shown in fig. 6, their height being generally about 5 ft., or say two-thirds of their ultimate height. Wildings of three years, and even more, which have grown irregularly, may be converted into straight subjects by grafting close to the ground, provided they are sufficiently vigorous. In fig. 7 a strong stock is shown treated in this manner, and it often happens that even during the first year the young scion will reach the height of its crooked predecessor. There is, therefore, no longer any excuse for growing crooked or knotty trees. The grafted stock is allowed to grow to the desired height, according to the preceding rules, with this difference, that they increase in size so quickly that there is no need to take any heed of the side branches during the first three years. It is by no means unusual for stocks grown in this manner to be ready for the second graft in the fourth year, in which case the young stock should be shield-budded with the variety required.

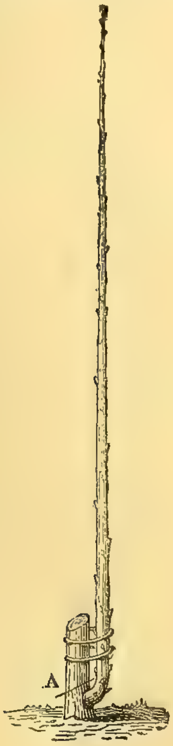


Fig. 6.

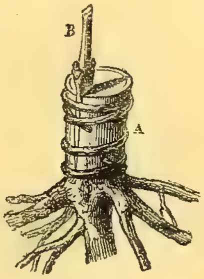


Fig. 7.

(To be continued).

VINE MILDEW.

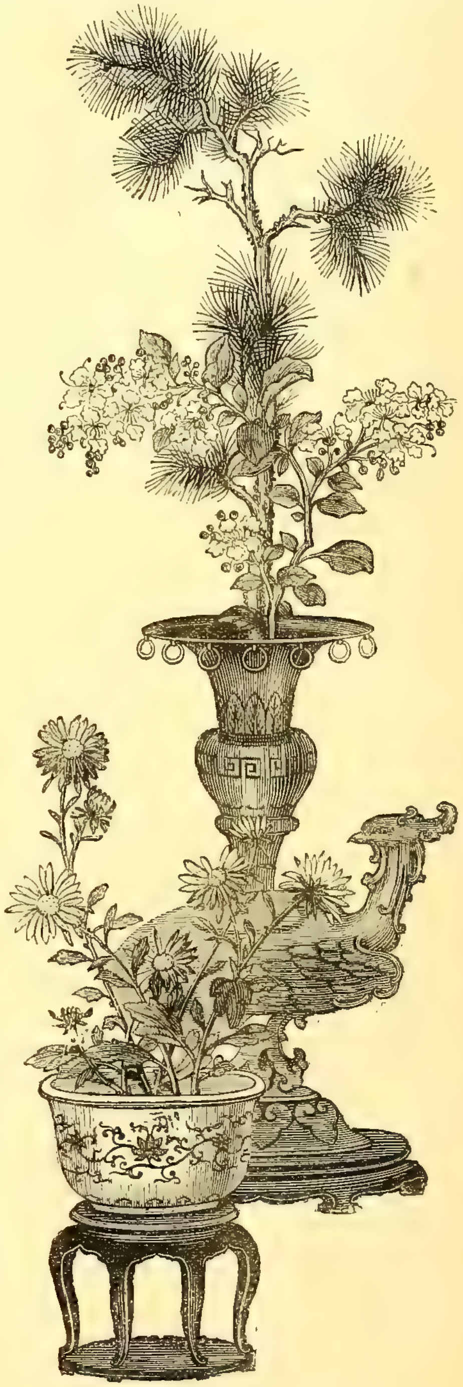
This is a fungoid growth upon the young leaves and fruit of the Vine, and was not known in this country until about the year 1847, when an account of it was given by Mr. Tucker, of Margate, where it was first observed; hence it received the name Oidium Tuckeri. In America, however, it had been known to exist for many years previously, although, singularly enough, the American varieties of Grapes are but little affected by it. In this country it has caused great destruction amongst Grapes, both in Vineries and in the open air, and in Vine-growing countries the entire season's crop is frequently destroyed by its agency. This mildew appears to the naked eye like a little white powder only, resting on the leaves, &c.; but by the aid of the magnifying glass, it is seen to be a true vegetable parasitical growth. It is a most insidious enemy, and requires extreme watchfulness, so as to observe its very earliest appearance, in order to check its progress. It vegetates very rapidly; from a small speck, it will in the course of a few days spread over an entire house, and if not arrested in its growth, its roots will have penetrated so deeply into the tissues of the affected parts as completely to destroy them. The mildew itself may be arrested and killed, but its effects are left, the skin or cuticle of the berry being blackened and injured beyond recovery. It seems to render the berry incapable of distending further, so that it soon splits open, and is of course ruined. The tissues of the leaves are also injured in much the same way. As to the causes of the Vine mildew, they are, as in most other diseases, very difficult to trace. Certain atmospherical conditions are favourable to its development, as to that of all fungoid growth. There is no more fertile source than cold, damp, sunless weather, with a stagnant atmosphere, and especially if this be succeeded by bright sunshine. On Vines grown in the open air, there is seldom a season in which they are not affected to some extent, but frequently it occurs so late in the season as practically to do but little harm. The prevention of mildew ought, if it be possible, to be the chief endeavour of all Vine growers; and in houses or Vineries it may be almost prevented. In the open air, it is much more difficult to contend with. As a stagnant atmosphere is favourable to its development, it naturally follows that one of the surest preventives is air—plenty of sweet fresh air—and this can be secured to a great extent by proper ventilation, and a judicious use of the heating apparatus to set the air in motion. Where this is not available, a drier atmosphere should be maintained in the house during cold damp weather, avoiding all unnecessary syringing or damping. In order to arrest or destroy the mildew where it has once obtained a footing, many and varied means have been adopted and recommended. The most effective, indeed the only truly effective agent, is sulphur, or certain compounds of which sulphur forms the major part. It is chiefly in regard to the method of application that the distinction between the various agents is made. Firstly, let it be noted that the sulphur must not be ignited in any way, that would to a certainty not only destroy the mildew, but also the Vines themselves. We have seen Vines so treated and so destroyed. As a preventive or safeguard, it is not a bad method to give the hotwater pipes—not a flue—a washing or coating over with the flowers of sulphur mixed with water, the gentle sulphurous fumes thereby arising being destructive to the mildew. Another very effectual method is to throw sulphur on lumps of freshly-slaked lime, which will have a like result. The most effectual and simplest remedy of all is to dust flowers of sulphur all over the Vines. This will, in the course of a few days, destroy the Fungus, when the sulphur should be immediately washed off by a forcible syringing with clear rain-water, otherwise the Grapes, being covered with the sulphur, would be spoiled. Many varieties of sulphurators have been introduced, but the simplest of all is the ordinary penny pepper-box. Various liquid compositions, which are applied by means of the syringe, have also been introduced, and are effectual in its destruction, such as Gishurst Compound and others, but as these frequently contain a proportion of oleaginous matter, their use for the destruction of mildew on Grapes is not to be recommended. Quite recently, a very effectual and excellent liquid application for its destruction has been introduced by Mr. Speed, of Chatsworth, which is stated to be altogether innocuous, and immediate in its effects. It is applied with the syringe, and immediately washed off.— "Florist."

FLORA OF CHINESE AND JAPANESE VASES.

A subject such as is suggested by the above title may aptly be divided into too parts—the first referring to the plants grown in the vases, and those figured on them. The singular vase gardens of the Japanese formed the subject of a note in the last volume of The Garden (see p. 223, Vol. XI.), and a few particulars regarding them, in addition to what was there stated, may be of interest. The three plants in the vase figured are three of the most popular favourites of Japan; the Conifer, indeed, can scarcely be specifically identified, but many species are much esteemed by the Japanese for vase-cultivation. Two or three years back, a figure of a variety of Pinus densiflora treated in this manner, which was supposed to be at least a hundred years old, but which was only a metre and a half high, was growing in a pot only half a metre in diameter: this was brought from Shiba, the site of the mausoleums of the old Tycoons of Japan, at Yedo. Sciadopitys verticillata, Pinus Trassoniana, and some species of Retinospora and Thuja are much employed in this manner. This dwarfing depends upon the prevention of an abundant flow of sap, so that, although the tree is kept alive and even healthy, its growth does not go on with its natural activity. They are planted in shallow, narrow pots, and care is taken that the roots never pass through into the ground beneath; water is but sparingly supplied, and the leading and strongest shoots are pinched off, while those that are allowed to remain are bent and twisted in various ways. The other plant in the upper vase will be recognised by those familiar with greenhouse plants as Lagerstrœmia indica, a native of China, and, like so many of the native plants of China and Japan, commonly cultivated in the gardens of those countries. It is at once recognised by the curiously crumpled appearance presented by the pretty rose-colourod petals; and is frequently to be noticed on Japanese porcelain and lacquer-work. The Chrysanthemum, which occupies the lower vase, is, as every one knows, a most popular Japanese flower; it supplies the official crest of the Mikado, and is constantly occurring on porcelain, silks, or cabinet work. One method in which the Japanese employ the Chrysanthemum is sufficiently remarkable, and is described by Mr. Fortune. In the tea gardens near Yedo, imitation ladies are made up out of the flowers, thousands of which are employed for the purpose; and the effect of the appearance of these figures in the little alcoves and summer houses is described as sufficiently startling to one not accustomed to such sights. The Japanese mode of grafting Chrysanthemums on the stout stems of a species of Artemisia, and then training them as standards, presents a curious appearance to English eyes.

It is perhaps not generally known that the Japanese are as fond of bouquets as they are of flowering plants, and that they construct them in a very artistic manner. This was well shown by Mr. G. A. Audley, in a lecture which he delivered in London a few years since upon "Japanese Art." According to his description, dwarf trees and clusters of large flowers are associated together without any attempt at symmetrical arrangement, this, indeed, being strictly avoided. Sometimes we find a piece of Bamboo rising straight up among the flowers, with a delicate creeper climbing round it, or a slender branch of some choice plant stuck into its side and deriving water from the hollow stem; or occasionally, if the Bamboo be a large one, its top joint is filled with earth, and a miniature Oak or other tree is planted therein. Occasionally a yet wilder effect is produced by the addition of gnarled and twisted branches to this already eccentric bouquet; these branches are sometimes leafless or have tufts of leaves at their extremities, and wander about the bouquet in a most erratic manner,

The polychrome porcelain of China has been classified according to the style of decoration which predominates in various examples. Thus, in the chrysanthemo-pæonian family, Chrysanthemums and Pæonies (Pæonia Montan) "invade the ground, overcharge the reserved medallions, and even appear in relief in the appendages of the vases." The bouquets with which the reserves are filled sometimes contain, besides the flowers mentioned, blades of Grass, branches of Peach or Plum in blossom, and a kind of double Pink. The Nelumbium, or Sacred Bean, also occupies an important place upon certain large vases, especially in those of the "Green Family," a group which is distinguished by the presence of a brilliant copper-green colour. The greater number of plants have a symbolic as well as an ornamental value; and this explains the use of the Nelumbium. "We see [on one of these large vases] boats filled with young women, their sleeves turned up to the shoulders, about to plunge their arms into the water, not only to gather the flowers, but to pick up the stalks already laden with the ripe fruit; through an archway opening to the palace the boats return, and upon an upper terrace the superior and his family, surrounded by dignitaries, are about to make a traditional repast, composed only of the Almonds of the Nelumbo, and which serves to recall annually to the hundred families,



Japanese Vase.

as well as to the greatest persons of the empire, the frugal life of their ancestors."—Jacquemant's "History of the Ceramic Art." The Feast of the Nelumbo is an important occasion in certain apartments of a Chinese palace, occupying much the same position as the Feast of Tulips in the residence of the Mussulman, and the preparations for it are sometimes represented on vases of the "Rose" class.

On Japan porcelain of the family first mentioned, we often find, besides the guik-mon, or arms of the flower of the Chrysanthemum, which, as has been already mentioned, is the badge of the Mikado, but also the Kiri or Daïrian tree (Paulownia imperialis), which is more particularly his official ensign or mark of power. The Kiri is not only stamped upon the coins, and upon everything intended for imperial use, but is even impressed on the bread or cakes served in the official repasts given to the Dutch ambassadors. Some specimens of Japanese vitreous porcelain are enamelled with rare beauty. "Some," says Jacquemant, "have light bouquets delicately studied, thrown irregularly upon the milky surface—the Begonia, with its crimson-lined leaves and delicate flowers; the Banana, with its purple bracteæ; the blue Lily of Japan. But even the ordinary blue cups in vitreous porcelain are characterised by their form, which resembles the flower with irregular petals of the garden Hibiscus. The creamy paste adapts itself wonderfully to the representation of vegetable fibre; strokes graved in the thickness of the porcelain render the smallest veins which radiate from the base of the petals; and the outer limb of these forms, round the cups and saucers, the most graceful edging of six lobes that can be imagined." The kind of Japanese porcelain known as Indian porcelain with flowers is especially characterised by the special nature or particular delineation of flowers, especially the Chrysanthemum, Rose, Pink, Jagged Poppy, double Anemone, light, diminutive flowers, Cinerarias, and, more rarely, the Celosia or Cockscomb. B. J.

RIPE GRAPES LOSING COLOUR.

It is no easy matter to lay on that jet-black colour and perfect bloom which is the pride of the most successful Grape growers, and to have it disappear while the Grapes are waiting to be eaten is provoking. That best of all black Grapes, the Black Hamburgh, is the most subject to this change of colour; in fact, it reaches its maximum of blackness before it is fully ripe, and almost as soon as it is ready for eating it begins to lose colour, until, if kept long enough, it approaches that foxy-red state which is the horror of cultivators. Nor does there seem any sure and certain remedy for this state of things. Neither a cool temperature, nor perfect ventilation, nor water at the root will wholly prevent early Hamburghs from losing colour as the season advances. There are, however, one or two facts in regard to this change of colour in ripe Grapes which may probably help to elucidate its cause; and, if so, the cause once determined, may lead to a cure, or at least a mitigation of the evil. It will probably be generally admitted that the loss of colour is greater in the south than in the north; that the earlier the crop the more it is affected, and that Hamburghs suffer most in this respect. If so, these facts would seem to point to heat, light, and drought as the active causes of loss of colour in ripe Grapes. It may be well briefly to refer to each of these separately. It can readily be proved by experiment that heat may be applied to such an extent to Grapes as to prevent their colouring, and also to force them to lose it afterwards. If such be the fact as regards artificial heat, of course solar heat is still more powerful. Consequently if Grapes be ripe in April, May, or June, and fully exposed to all our summer and autumn sunshine after maturity, it seems alike natural and reasonable that they should lose their colour. As solar heat declines, either from a change of latitude or of season, the loss of colour is less—thus almost proving to demonstration that the loss of colour is caused by heat. Doubtless, too, light has a good deal to do with the loss of colour in ripe Grapes. Light is evidently the most active promoter of chemical changes in vegetable life and products—the maker, developer, and destroyer of colour. Comparatively few of what may be termed the vital colours of plants or fruits are fixed or permanent. Consequently, the colour of Grapes, though it seems to us to be a fixed and permanent quality or quantity, is probably not so. It waxes greater and deeper till it reaches a maximum; it then immediately begins to wane until it reaches the foxy state. If this representation of the matter be in any sense the true one, and if the colouring of Grapes be less like the building up of a house than the flowing of the tide, and the loss of colour the ebbing out of the same, then it follows that the more intense the light, the sooner the Grapes would lose colour, for the light not only lays on, but also dissipates colour. Hence it is found that the shade of leaves, of clouds, or of canvas, conserves the colour of Grapes, while those most exposed to direct solar light lose colour soonest and to the greatest extent. As the sun's rays become more oblique in the autumn, their illuminating and chemical force decline; and hence late Grapes continue black for a much longer period than early ones. There may, however, also be another reason for this difference. Early Grapes probably reach a higher degree of maturity than later ones, and the change of colour, which is mostly associated with greater sweetness, may arise from the conversion of a larger proportion of the flesh and juice of the Grape into sugar, a process which would, of course, be hastened in proportion to the intensity of the light. Drought is doubtless also a cause of the loss of colour in ripe Grapes. Dryness at the roots and semi-aridity of the atmosphere render the flesh of Grapes more or less flaccid, and relaxes the tension on the skin of the berries. How far colour depends on tension and thickness of rind is one of those points that is still unsettled. Marked changes of colour, however, are found to follow changes of tension and internal condition, and as our Black Hamburghs become more or less foxy, they, as a rule, also become slightly flaccid or shrivelled. Assuming that drought is one cause of this loss of colour, we can understand why Hamburghs would be amongst the first Grapes to be affected, because they are thinner-skinned than most black Grapes. Possibly, too, the Grape rinds differ as much or more in degree of porosity as in thickness. Otherwise it would be difficult to account for the fact that that very thin-skinned Grape—the West's St. Peter's—never loses colour, while Black Hamburghs mostly do to a greater or lesser extent. Be that as it may, however, there can hardly be a doubt that the excessive dryness of earth and air, which are held to be needful for the safe keeping of ripe Grapes, causes them to lose colour. The dry air is kept in constant motion, and thus of necessity drains out much of the juice, and probably some of the goodness, as well as rubs off a great deal of the colour from the Grapes. It seems worthy of serious consideration whether all this drought at top and bottom, and this violent agitation of the air, are essential to the safe-keeping of ripe Grapes. Late Grapes, and Grapes in more northern latitudes, are kept sound and good under far less arid conditions, and with little or no loss of colour. Were the choice between a loss of colour and the loss of the Grapes by decomposition, no one would hesitate for a moment to let the colour go; but if the colour can be preserved intact as well as the Grapes by a different method of keeping the fruit on the Vines from the prevailing one of drying them up into redness, it may be wise to adopt it. Than this few subjects could be more important or timely for present discussion, for the change of colour is by no means confined to Hamburghs nor black Grapes, though, even were it so, it would be of immense importance; but white Grapes, and that best of them all, the Muscat of Alexandria, also subject to a change of colour; it proceeds from green to golden—the pledge and proof of perfect flavour in this matchless Grape. But it does not rest there; it runs into a purplish tint, in which it loses flavour, and from thence into dark brown, the prelude to decomposition. As already remarked, Hamburghs seldom lose flavour through losing colour; there is, in fact, at times an increase of sweetness, though not of lusciousness. But the great point is to know how to keep the colour of Grapes perfect to the last. Perhaps in the present state of our knowledge the simplest and safest plan is to cut them as soon as they are ripe, and bottle and rail them in the dark in a cool temperature of, say, 45°, and in a still atmosphere, neither too dry nor too moist. Grapes would not then be exposed to the active destroyers of colour to which I have adverted. D. T. F.

HARDY APPLES.

I would recommend those who intend to plant to send orders for what they may want to the nurseries at once, if they have not done so already; and those who require fruit trees should consult the pages of The Garden with a view to ascertain what those varieties are that have not suffered materially by the trying weather that occasioned such mischief to orchards and fruit gardens during the early spring months. That most useful of all fruit trees, the Apple, though it suffered less than did the earlier-blooming fruits, has not escaped; and of many sorts much less than an average crop was produced. Out of about five-and-thirty varieties growing here, Cellini (espalier on the Paradise stock) yielded abundantly, Court-pendu-plat (espalier on the Crab stock) did the same, Blenheim Orange (a large orchard tree) yielded fairly, but most of the Apples on this tree did not reach their usual dimensions. The same may be said of Waltham Abbey Seedling. A very young standard of Bess Pool had as many Apples on it as it could safely carry. But the Apple we most depend on for giving us fruit is one of native growth. I have two standards of it that have borne fruit for many years, and I may say with truth that it never fails. This Apple is little known except in the villages near Manton, where, at the beginning of this century, it was found growing in a hedge. A man named Hotchkin raised several young trees of it in his garden at Lyndon from scions taken from the parent tree. The soil about Lyndon, being a strong clay, is favourable to the growth of most kinds of Apples; but I learned from Hotchkin that this Apple did not grow so well there as it does in lighter soils; and I have found that to be the case. In size and form it resembles the Blenheim Orange; its colour is a greenish-yellow, deepening into a dull orange after it has been kept awhile. It is excellent for cooking, bears abundantly, and is very hardy, and if carefully stored will keep well till February. It is known at Manton by the name of Hedge Apple and Hotchkin Pippin. The latter name was given it by the late Mr. Wood, of Swanwich in Staffordshire, when he was curate of the adjoining village of Wing. There are doubtless many Apples superior to the Hotchkin Pippin, and many that keep much longer; but it may fairly be asked of what benefit would the very best variety be to the grower if he could not rely upon it for producing fruit with regularity and in fairly sufficient quantity? Where the soil and climate are not very favourable to the production of orchard fruit, most housekeepers would, if they were consulted, ask to have planted those sorts upon which reliance can be placed for a supply of fruit. How is this end to be accomplished? The year 1877 may help us to solve this question; and a comparison of the fruit reports sent to The Garden during the autumn months will assist us in fixing upon the varieties that seem, from these reports, to be the most likely to bid defiance to the vicissitudes of seasons and recompense the grower. If I had not happened to have any one of the six varieties mentioned here, the sum of the produce of all the rest would not have equalled that of either the Blenheim Orange, the Waltham Abbey Seedling, the Cellini, the Hotchkin Pippin, or the Court-pendu-plat; and my fruit room, which is now nearly filled, would have been almost empty. All the trees were very full of bloom and I expected an unusually good yield. Some produced a few Apples, and one or two had rather more, but nothing approaching to an average crop. One tree, Fearn's Pippin, though covered with bloom, did not set a single fruit. Nothing that the orchard produces can take the place of the Apple, and any information tending to secure a regular supply of that valuable fruit will be welcomed by every one who has the charge of the domestic commissariat during the long winter months. I may add that I have just ascertained that the Hotchkin Pippin may be found in some nurseries under the name of the Rutland Foundling.

B. S.

Apple Culture in Brief.—Prof. Beal, of the Michigan Agricultural College, gives the following directions for Apple growing:—"I think it a good plan to keep young trees mulched, and I am not sure that it is not the best of all ways to treat large or old trees as long as they live. Mulching prevents the rapid evaporation of moisture from the soil, keeps the surface mellow, prevents the soil from often freezing and thawing in winter, and from becoming overheated in summer. Whether or not to cultivate the ground under trees which have become well established depends upon circumstances. I have never seen an Apple orchard which I thought was injured by too frequent shallow culture, but this may be the case in some places, especially in warm climates, or where the soil is deep and very rich. Whether to cultivate or not can be told by the appearance of the trees. If the colour of the leaves be good, and the growth all right, and the trees bear plenty of fine fruit, they are doing well enough, even if in Grass; but if the leaves are pale, the growth of the annual twigs much less than 1 ft. in length on trees twelve years planted, and the fruit small and poor, something is the matter; they are suffering from want of plough, harrow, or cultivator, or a heavy mulch or coat of manure, or two or more of these combined. The upper twigs of trees planted twelve years ought to grow from 6 in. to 12 in. or more each year."

"Does Protection Protect?"—All my gardening life have I been a sceptic on the ill effects of a low temperature when unaccompanied by wind. Several years ago when the mercury fell to 14° below zero, and the air was perfectly still, the Peach buds were apparently uninjured; but another season not nearly so cold, yet exceedingly windy, the buds were unmistakably killed. This theory has been fully demonstrated during the past spring in many instances, but in one particular case was it very convincing. A long bed was devoted to Strawberries, and this was skirted in the back by a fine Hemlock hedge. At one end of each is a building, so situated that the high north-west winds during winter were prevented from striking either for two-thirds their length, but the main portion being fully exposed, indicated when spring opened the exact line of the division between the protected and unprotected sections of both bey and hedge. In the first of these the Strawberry plants were sd badly injured as to produce little or no fruit, and the hedge was so badly cut up as to need replacing. In the protected portion mo Strawberries were as fine as any I have ever grown, and the hedge is a model of beauty. Along the north side of my dwelling I have a bed of Rhododendrons; at the western end where the wind sweeps around the corner, the plants were all more or less damaged, but at the other end of the bed they were uninjured. These high, drying winds, causing excessive evaporation, injures the vitality of vegetation during the season of partial rest, for vegetation is never entirely dormant. Strong, cold winds during a drought in winter are invariably destructive to all manner of plants not iron-clad, and moisture will go far toward remedying the evil. With all our boasted knowledge of plant-life and the influence exerted upon it by the weather, we are frequently puzzled to ascertain the cause of many a mishap to our choice trees and plants. Acclimatisation is a delusion and a snare, as many of our cultivators have no doubt learned to their sorrow, time after time. As a partial remedy I want to impress upon the minds of my countrymen that protection by means of screens and groups of Evergreen trees is the best investment made by any one living in the country; at least, such has been my experience and observation.—Josiah Hoopes, in "Tribune."

Pelargonium Trials at Chiswick.—The following is a select list of the best varieties in each class:—Flowers Scarlet (Nosegay Section)—Wellington, H. M. Stanley, Duke of Devonshire, and Waltham Seedling. Flowers Pale Orange-Scarlet—Triomphe de Stella, Golden Harry Hieover, Grand Duke, and Mrs. J. George. Flowers Lake-Rose—Arthur Pearson, Lawrence Heywood, and Violet Hill Nosegay. Flowers Scarlet shaded with Magenta—Caxton, Argus, and A. Rivers. Flowers Scarlet, leaves Zonate—Vesuvius, Mark Twain, Rose of Summer, John Watson, Wonderful, and Aurora. Flowers Scarlet with White eye—A. F. Barron, Harry King, Richard Dean, and Theocritus. Flowers Scarlet, leaves Plain Green—Duke of Sutherland. Flowers Pale Scarlet—Red King and Colonel Wright. Flowers Crimson-Scarlet—Mrs. Vincent and Rev. F. F. Fenn. Flowers Cerise and Rose—Lucius, Princess of Wales, Claude de la Meurthe, and Ianthe. Flowers Pale Pink—Christine. Flowers Rose-Pink, leaves Plain—Mrs. Augusta Miles, Mrs. Halliburton, and Cleopatra. Flowers Rose-Pink, leaves Zonate—Rose of Allandale. Flowers Pink, shaded with Purple—Mrs. Turner and Amaranth. Flowers Salmon—Vanessa. Flowers Oculate—Lucretia and Eugénie Mézard. Flowers White—Snowdon. Golden Tricolor—Mrs. Pollock, Countess of Ashburnham, Fair Emily, Lady Cullum, Bright Eyes, Macbeth, Home Influence, and Beautiful for Ever. Plain Golden Variegated—Golden Superb Nosegay, Robert Fish, Golden Harry Hieover, Creed's Seedling, and Crystal Palace Gem. Silver Tricolors—Lass O'Gowrie, Glen Eyre Beauty, and Prince Silverwings. Silver Variegated—Little Trot, Albion's Cliffs, Miss Kingsbury, Princess Alexandra, and Silver Chain. Bronzes—The Czar, Black Douglas, Maréchal MacMahon, James Richards, and W. E. Gumbleton.

HINTS FOR PLANTERS.

As planting forest trees will now be general, the following concise remarks on the work may prove instructive, and assist those about to engage in the operation. The ground ought to be securely enclosed with a good ring fence. Draining should be finished some time before planting begins, so that the ground has time to "drip." It should be remembered that the necessity for draining arises from water rising to the surface in springs; or, from the flatness of the ground, it is flooded with water oozing out from higher land, and also from the retentive quality of the subsoil a superabundance of water is located in the stratum immediately beneath the surface. Stagnant water is extremely injurious to trees, and draining should never be neglected. Clearing brush and other obstacles to planting may be done any time previously to the time of planting, but moorland subject to rank heath should always be burned some years before, so that a fine young healthy swarth covers the surface, which affords valuable shelter to small plants. The forester should ascertain as far as practicable the nature of the soil, subsoil, and if possible the rocky formation, to enable him to distribute his plants judiciously over the ground, giving each individual its *locale* subsidary with correct arbori-chemical principles. It is further necessary to be thoroughly conservant with the situation, to allot such plants suitable for exposed aspects their proper place, that as the trees grow up they may be beneficial. The next consideration is the number of the various kinds of plants to form a mixed plantation, and also their size. Having examined the nature of the soil and its surface herbage, also having decided on the tree intended to form the permanent crop, these will give the best guide to go by. The hard wood need never be planted closer than 24 ft. or 30 ft. apart. Several kinds of planting-irons (tools) are recommended, but a common Scotch spade (the spade universally in use in Scotland is greatly superior to that in England or Ireland) is the best adapted for all practical purposes. In removing plants from the nursery row great care should be taken not to cause root fracture, more especially with the resinous tribe. Pit planting is very common, but every variety of pitting has some forcible objection to its use. The loosened earth admits of a greater evaporation in dry weather, and absorbs too much moisture in winter, and, being a slow process, increases the cost of planting very considerably. Slitting or notching is certainly the best system of planting. It commends itself by being the most expeditious. There are four kinds of notches, all well adapted to varying circumstances: the T (tee) form is very answerable in stiff ground; the L (ell) for small plants; the H (aitch) for a tough surface and large-rooted plants; and the X (cross) for deep surface and large plants. It is advisable to pare off the surface before putting down the tree; to do this entails very little extra labour. The planter stoops low, and with a smart horizontal swoop of his spade pares off a thin scraw, and exposes the fresh soil beneath. In making the notch the operator strikes his spade into the ground perfectly perpendicular and as deep as possible, and by again striking across the first slit a notch is made similar to one of the letters shown above, which, by bending down the handle, is sufficiently opened to receive the plant. If the incision be well made, a smart blow with the heel on each side of the plant is all that is required to firm it in the ground. Great care should be taken to see that the roots are all well under the sod and the plants straight. Much depends on the first cut. An expert spadesman amalgamates the operation of paring off a scraw with the making of a notch, and will, with a boy holding the plants, put in from 1,000 to 1,500 plants per day of ten hours. Planters should be arranged into squads of twenty or thirty spademen, with one boy or girl to attend two men, and one or two stronger boys carrying and supplying the planters with plants from the "stock," "sheugh," or "bed"; the whole gang to be under one foreman, whose duty is to superintend the work and see it properly performed. On laying the men ought for the work the most experienced hands should be placed at each side to act as leaders. The squad should work from side to side. Commencing in the morning at the fence, the leading man after putting in his plant moves off 8 ft., the second spade putting his plant between the leader's two, but 4 ft. behind, and each succeeding man follows inserting his plant between the preceding man's two, until the limits of the enclosure is reached, when the forman gives the order "reverse," and each man falls back one space, puts in a plant, and without the least confusion as to places makes the spade once the rear now the leader on the return journey. By this system the foreman is able to detect the smallest irregularity, and by moving backwards and forwards can see every plant put into its place.—"Journal of Forestry."

The Late Gale.—The gale which swept over this part of Devonshire on the night of the 14th inst. has been most disastrous in its effects. Some of our finest old trees, Elm, Ash, Beech, Wild Cherries, &c., are torn up by the roots. I have just measured one of the largest Elms, and find the diameter of its bole at the base to be 7 ft.; it has upturned a ball of soil 16 ft. high and 18 ft. wide, but barely 3 ft. deep. Many other trees of large size are also torn up by the roots, and others, varying from 1 ft. to 3 ft. 6 in. or 4 ft., are broken off at different heights up their boles. One large Beech where it is broken is a mass of splinters, like a loose bundle of laths, while tops of young Cedars, Silver Firs, &c., are broken almost clean off. Trees, the roots of which kept firm hold, are snapped asunder. We have about 30 ft. of the top of a fine Douglas Fir broken off, the broken portion being apparently rather more than one-third the height; the diameter at the point of breakage is 16 in. On Monday morning the pleasure grounds and park were strewn with broken branches of all sizes, from the smallest spray to the tops of large trees. Among the trees which suffered least are the Turkey and Lucombe Oaks, fine specimens of which occupy the most exposed situations. It would, therefore, be well for planters to use these more freely than they do as nurses and wind-screens in places much exposed. In the case of English Oaks, although very few are blown down, their heads and smaller branches are much broken. In the flower garden, Pelargoniums, &c., that were in full flower lost every blossom, and the foliage generally seemed seared and withered. Peas, Scarlet Runners, and Jerusalem Artichokes exhibited the same appearance, while many plants of autumn Broccoli were twisted out of the ground. Such a gale has not occurred here for many years.—John Garland, *Killerton, near Exeter.* [Disastrous accounts of the gale in question have also come from other quarters. At Holme Lacy, Hereford, an old Tulip Tree, one of the finest in the country, is a perfect wreck. The havoc among Oaks and Elms is said to be dreadful. In this county, too, according to newspaper reports, no fewer than 10,000 Apple trees have been uprooted, and the destruction committed amongst fruit trees in Monmouth is also said to be very great. At Wolverhampton, in the colliery districts, much damage has likewise been done. An immense Oak and some Elm trees, the growth of centuries, have been uprooted and blown across the road close to the town. "T. M. M.," writing in the "Times" from Budleigh Salterton, states that the appearance of the gardens and landscape on rising on Monday was of a magical nature, the former being hopelessly withered up, as though baked in an oven, while the latter had all the trees browned and dried up to a dirty brown paper appearance. This dry gale, he adds, is a fit sequel to a summer of wonderful dryness here, there having been only twenty-seven days on which rain exceeding 3-100ths of an inch fell in the last 137, viz., from the beginning of June.]

Peen-to, or Flat Peach of China.—In the April number of the "Gardeners' Monthly" I referred to this peculiar variety, which, although in my collection for a number of years, had heretofore failed to produce fruit. Some two years ago I gave a friend residing in Pensacola, Florida, trees of the most promising of my varieties, and to-day (June 23) he sends me a box of the fruit with the following note:—"At the time when we received the trees you stated that they would not answer for Georgia. I can assure you that here they are a perfect success, and just the Peach for this climate. The samples I send you were taken from one tree, from which we have plucked 1200 Peaches." As this is the first instance of the Peach having fruited in the United States, it may be interesting to California and Florida fruit growers to know more about it. I add the description of the fruit. Size, from 2 in. to 2½ in. in diameter; shape, irregularly round, and very much flattened; 1½ in. thick on one side, and 1 in. on the other; a deep furrow starts on the thinnest side from the stem and ends on the apex, where a deep hollow is formed, having in the centre a deep, narrow calycinal cavity; skin greenish-yellow washed with carmine, and a deeper cheek on one side; flesh white, exceedingly fine in texture, juicy and melting, and with a delicate almond flavour; clingstone; quality very good; pit quite flat; tree a very rapid grower, of open habit; holds its leaves later than any other variety.—J. J. Berkmans.

The Potato Beetle in Iowa.—We have received from Messrs. Cheal & Sons, Lowfield Nurseries, Crawley, Sussex, the following extract from a letter which they have received from a relative of theirs, a farmer in Iowa:—"Earlham, Dallas County, Iowa, U.S.A.—Potatoes look well here, considering the dry weather which we have had, and the Potato beetles have not damaged them seriously. You English people seem to be too easily scared respecting this beetle. Here they do not give us much trouble, though we have thousands of them. If they are picked off at first, they do not do much harm afterwards. They deposit their eggs on the under sides of the leaves, and the lady-birds eat them. Were it not for the latter, the beetles would be swarming, and I think there are more lady-birds in England than here. Paris green will kill them, and Guinea fowls will also eat them. People say if you plant three Flax seeds with every Potato, they will keep off the beetles. If the Potatoes be planted out early, they get up strongly before the beetles make their appearance, and after the Potatoes have grown to a considerable size they keep ahead of such pests. We never plant Potatoes two years in succession on the same ground. Some neighbours did so last year, and did not get a Potato. In picking off the beetles, care should be taken not to squeeze them too tightly, as their blood is poisonous, and will raise a blister. The best way to kill them is to scald them in hot water."

A Series of Horticultural Exhibitions will be held at Dresden, in 1878, in honour of the jubilee of the Flora Society, which was established in that city in 1828. The first exhibition will be held from March 21 to 25; the second from May 16 to 20; the third from July 25 to 29; and the fourth from October 3 to 7.

From Mr. Wilder's recent address at Baltimore, we learn that as long ago as 1773, when the crop of Apples had failed the previous year, English importations from this country had been made and were highly appreciated. In a letter from Michael Collinson to John Bartram, of Philadelphia, he writes as follows:—"Your American Apples have been an admirable substitute this season, some of our merchants having imported great quantities of them. They are, notwithstanding, too expensive for common eating, being sold for 2d., 3d., and even 4d. an Apple. But their flavour is much superior to anything we can pretend to, and I think even superior to the Apples of Italy."

The Belladonna Lily Under Glass.—This, the best of all the hardy Amaryllids, is at present flowering beautifully with us in Wales, planted out in ordinary soil in the bed of a conservatory. Each of its flower-spikes is about 15 in. high, and surmounted by numerous blossoms. It succeeds very well under ordinary treatment in the open air, but if the weather be wet when the blooms open they do not last so long as in a cool house under glass.—A Cambrian.

Pansies and Violas.—Pansies have not as a rule done particularly well this season; but Mr. Hooper, Widcombe Hill, Bath, has sent us blooms of a few kinds which seem to form an exception, for they are as fresh and beautiful as Pansies well could be, even thus late in the year. Amongst dark sorts, the best were Souvenir and Grand Monarch, a blue one called Remarkable, a fiery-crimson and maroon kind named John Cranston, and a good light-ground sort, blotched with velvety-purple, called Conductor. We have also received from Mr. Paul, of Paisley, an unusually fine yellow seedling Viola, said to be a dwarf and free-flowering kind, and evidently an acquisition.—M.

Delphinium Cashmirianum.—This Larkspur is now growing in Mr. Parker's nursery at Tooting. Though as yet scarce, it will no doubt eventually become popular, and may probably, if fertilized with kinds of different habit, give rise to new and important varieties. The plant is found on the Western Himalayas, at altitudes varying from 12,000 ft. to 15,000 ft. The flowers, which are of a bright, purplish-blue colour, are borne on leafy stems from 15 in. to 18 in. high, which are produced freely all round the bases of the plants, and contrast effectively with the green masses of palmate leaves with which the plants are furnished.—C. S.

Ivy on Ruins and Hollow Trees.—In this neighbourhood are numerous remnants of ancient churches and monasteries that have been landmarks for ages, and in most cases they are overrun with Ivy that has sprung from the decayed mortar rubbish, both on the inside and outside walls, and which now has stems more like those of trees than Ivy, crowned with majestic heads of berry-bearing branches, that have never been either pruned or trained. On hollow trees Ivy is also equally effective, not only in garnishing and beautifying their rugged stems, but also in serving as a support for binding together their decayed portions with living bands, thereby mutually supporting each other. There is a decided and, I believe, well-founded prejudice against encouraging Ivy on such trees as are expected to grow into timber, as it is certainly prejudicial to their development. But in the case of trees of ancient aspect, that are past use as timber, it is well worth while to plant Ivy at their bases, and to protect it until it has become well established. It will afterwards well repay the trouble that has been taken with it by converting their bare stems and branches into so many wreaths of luxuriant foliage. The winter aspect of such trees would be poor indeed if divested of their covering of Ivy.—J. Groom, *Henham.*

Violets by Post.—The season for Neapolitan and other Violets having again arrived, it may not be uninteresting to your readers to know that any one, though away from home, may enjoy them fresh every morning from October to May through the post. They are so well adapted for travelling, that a journey in a tin box of 200 or 300 miles does not in the least impair their sweetness or freshness. For Violets we have tin boxes made especially for passing through the post; they are 6 in. long, 2½ in. wide, and 2 in. deep. In these the blossoms are laid flat as they are gathered, between layers of Violet leaves pressed down tolerably close until quite full, when a layer of wadding is put on and the lid closed tightly down; the direction may be pasted or written on the lid, and they may be relied on to reach their destination without being crushed, as they usually are in card-board boxes, and in fresher condition, as in tin they are cool and air-tight. Boxes of the size just named, when full, require three penny stamps, and hold several dozens of the finest blossoms. Boxes of this kind are equally serviceable for choice flowers, such as Gardenias, Rose-buds, Orchids, or Stephanotis; their size may be varied, according to the flowers intended to be sent in them; but I feel sure that any one staying at a distance from their own garden, and receiving from home every morning a box of fresh Violets, will find it one of the by no means small advantages which the Post Office affords. I may add that Violets look best garnished with Violet leaves, but the leaves of the Neapolitan variety are not so effective as those of the single blue, such as The Czar, and hardy Russian kinds.—J. Groom, *Hexham.*

Poisoning of Cows by Yew.—M. Hartenstein records an important case of poisoning by Yew, as coming immediately under his own observation. Last April a herd of seventeen cows were driven a distance of twenty-four miles in search of fresh pasturage, the time occupied by the journey extending over eleven hours. On arrival at their destination the pasturage sought for was not obtainable, and for want of better accommodation the animals were placed for the night in an empty garden, surrounded by Yew. In the morning the four finest cows were found dead, and three others died immediately afterwards; the remaining ten were quite well. On examining the garden the leaves of the Yew bushes were discovered cropped all round. Post-mortem examination showed the bodies distended, the eyes dim, the nostrils clogged with blood and mucus, the liver literally looking as though it had been thrown into boil-water, and the small intestine for a distance of three yards almost black. The rumen was discovered full of green herbaceous matter, in which pieces of Yew were easily recognised. It is supposed that the ten surviving cows, being older than the rest, had at once lain down to rest on reaching the end of their journey.

NOTES AND QUESTIONS—VARIOUS.

Autumn Pears.—We are now using the Fondante d'Automne Pear from an east wall, and a most delicious Pear it is—perhaps the prince of all October Pears.—R. Gilbert, *Burghley.*

Celosias for Church Decoration.—We find nothing so good for church decoration at this time of the year as Celosias. Their plume-like trusses of various colours are very showy and appropriate, and they are not so easily damaged as many other flowers.—S. W.

The Gloire de Dijon Rose, it is said, in the "Journal des Roses," was raised from seed by MM. Jacotot, nurserymen, of Dijon, in 1849. It was first publicly exhibited in 1852, and sent out in 1853.

White Siberian Squill.—This is an early flowering plant but seldom met with; but when associated with the ordinary blue Scilla sibirica, either as an edging or otherwise, or by itself in patches in herbaceous borders or on rockwork, it has a pretty effect.—R. M.

Keeping Pine-apples after they are Ripe.—Pine-apples keep better after they are ripe in a cool, light room than anywhere else. Two months ago we had more ripening than were wanted, consequently the plants, pots and all, were lifted out of the bed, just when the fruit was ready for cutting, and set in a cool store room. Nothing farther has been done since, and the fruits are now as plump and fresh as on the day when they were shifted out of the stove.—A Cambrian.

Electric Conductivity of Trees.—According to M. de Moncel's observations on this subject, soft woods of spongy tissue and vigorous vegetation, such as the Elm, Chestnut, Lime, Poplar, &c., are the best conductors; while the hard woods of slow vegetation are the most resistant. Birch seems to form an exception. [It appears from M. de Moncel's experiment, that the electric conductivity of living wood is generally in direct proportion to the amount of sap and other moisture which they contain]

New India-rubber Tree.—Mr. Robert Cross publishes some interesting notes in the "Geographical Magazine" in regard to certain important trees of the Amazon Valley, and announces that the Ceara India-rubber comes from a hitherto undescribed species, materially different from any yet known. He was unfortunately unable to obtain it in flower, so that its precise position in the vegetable kingdom was not ascertained; but young plants which he has sent home to England will, he hopes, furnish the information at no distant day. The region in which the tree grows is very dry for a great part of the year, rain occurring but seldom, and in some seasons scarcely at all. It is found up to about 200 ft. above the sea-level. It is thought to be suitable for cultivation in India, where there are extensive tracts of a precisely similar character to those in which it occurs, although it is believed that the tree will not stand a temperature below 50°.

No. 310.] SATURDAY, OCTOBER 27, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

PROPAGATION OF PLANTS BY ROOT CUTTINGS.*

THE most natural method of propagation is by means of seed; but there are many plants in cultivation which rarely produce seed, and many more which cannot be depended on to come true from seed. Moreover, we have now many hybrids, a class of plants which in all probability will be largely increased before long; as is well known true hybrids seldom seed, and those which do produce fertile seeds we often find reproducing varieties totally different from the kinds we wish to preserve. It is evident, therefore, that we must adopt other means to increase those plants, and at the same time keep their distinctive peculiarities intact. Fortunately there are many ways by which this may be done, such as by means of cuttings of the stem, grafting, budding, inarching, layering, division, and the mode which I am about to describe, by cuttings of the root. Before doing so, I may mention that it is not always easy to distinguish between stem and root; many forms of stems are often confounded with roots, such as the rhizomes of the Iris, the corms of the Crocus, the bulbs of the Lily, the tubers of the Potato, the soboles of the Couch Grass, &c., which are all forms of underground stems. The roots I mean to refer to are different from any of these, but inasmuch as they possess the power of forming leaf-buds, they are different from true roots, which, according to botanists, have no such power; one of the main distinctions between stem and root being the absence of any provision for forming leaf-buds on the latter. They appear to be intermediate, that is, can perform the functions of both root and stem if placed in favourable circumstances. The propagation of plants by means of root cuttings has been long practised, for I find that the late Mr. T. A. Knight in 1816 succeeded in growing Apples, Pears, Cherries, and Plums, by putting pieces of their roots about a foot long into the open ground. Leaf-buds are formed naturally on the roots of Pyrus japonica, Moutan Pæony, Plums, Anemone japonica, and a few others. There are many plants which possess this power of forming buds on their roots, although they remain dormant until, either by accident or design, their roots are cut and they then push buds. It is generally supposed that the number of plants capable of being propagated in this way is very limited; but, judging from my own experience, I am inclined to think that there are many more than we are at present aware of. Having got a plant which we know will increase by means of roots, the first thing necessary to be done is to shake the soil or wash it clean away from the roots; next, cut them into little pieces, generally about ½ in. long; but some kinds, such as the Ipecacuanha, for example, I have found to succeed when only one-sixteenth of an inch long; others require to be about 1 ft. long. A curious fact in connection with this is, that usually no more than one bud starts, whether the pieces of root be left one-sixteenth of an inch or a foot long, all the strength goes to the bud that starts first and the others remain dormant. Having got the roots cut up, boxes or seed-pans may be prepared for them the same as for ordinary cuttings, viz., filled with light sandy soil, adding a little peat for such plants as naturally like that kind of soil. The pieces of root should then be scattered over the surface of the pans and covered about their own depth according to the thickness of the roots used; give them a slight bottom-heat, and in a fortnight or three weeks' time, the young buds will be found rising above the soil and elbowing each other for room. Spring is the best time to put them in, although they may be inserted all through the summer months. In the case of many hardy plants bottom-heat is unnecessary, unless where time is an object, which in most cases it is. Care must be taken in hardening off plants struck in heat, as they will be found to suffer more than in the case of stem cuttings unless gradually innured to the cold. This is the whole process, and it has several advantages to recommend it. 1st. A good supply of roots may be got without at all destroying the appearance of the stock plant. 2nd. The cuttings are more easily and quickly put in, and in the third place the results are more satisfactory; provided the roots are healthy it is rare to find a piece which will not grow. The only difficulty is to learn what plants are capable of being propagated by means of roots, and this can only be discovered by experiment, as there is nothing, so far as I can see, about the appearance of the roots themselves that would lead one to be certain whether they could be propagated in that way or not. The following plants I know, however, may be increased by means of pieces of roots. My first attempt was made with Aralia papyrifera, and then with Aralia japonica; I do not, however, yet know whether the new Aralias, such as Veitchi, elegantissima, and others of that section may be increased by roots or not; but most probably they may. In that case they would require to be on their own roots and not grafted plants. All the kinds of Dracænas may be propagated in this way; also Hellebores, particularly H. grandiflorus or maximus. Pelargoniums thus treated will also succeed, but not so well as by stem cuttings, with the exception of fancy Pelargoniums, which are often difficult to strike by means of stems cuttings. Monsonia lobata, another Geraniaceous plant, Pulsatilla bracteata, a somewhat rare Anemone which has fibrous roots (not a creeping rhizome like the Wood Anemone) may also be increased by root cuttings. Anemone japonica (which grows naturally from the roots), Clematis, and Ipecacuanha may also be increased by means of root-cuttings. Plants of the Ipecacuanha were first sent out to India in Wardian cases, but it was afterwards found that the roots alone could be successfully sent out by post, and several small boxes of them were sent out in that way by Prof. Balfour, along with printed instructions as to their propagation drawn up by Mr. M'Nab. The roots arrived in good condition, and on being treated as directed, abundance of plants was the result. Drosera dichotoma, a rare Australian Sundew, strikes readily by means of pieces of root. Cuttings of all kinds of Bouvardias are now commonly raised from roots, as are likewise Rosa rugosa and other species, and many of the hybrids, together with Senecio pulcher; Scolymus grandiflorus, Viola pedata, Cephalotus follicularis (the Australian Pitcher plant), Passifloras, Melianthus, Greyia, Xanthoceras sorbifolius, and Venus's fly trap (Dionæa muscipula). With regard to this plant it is certainly not the root that is propagated, but the bulbous enlargement formed by the old leaf-stalks, the scales of which are pulled asunder in the same way as is often done in the case of Lily scales. Sarracenias and Darlingtonia californica may also be propagated in this way, but they are clearly rhizomes, not roots, that are used for the purpose.

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* Read before the Scottish Horticultural Association, October 2, by Robert Lindsay, Royal Botanic Gardens, Edinburgh.

NOTES FROM KEW.

THE following hardy plants, in spite of frost, rain, and lack of sun, are still in full beauty. Firstly, the Asters claim our attention, and from the large collection the species hereafter noted are the very best of their respective colours. Aster Chapmanni has very pretty lavender flowers, and grows from 4 ft. to 5 ft. high. The rose and blue varieties of A. Novæ Angliæ are exceedingly handsome; the latter attains a height of from 4 ft. to 5 ft., but is not so tall by 1 ft. as the former. A. patens forms a bush about 2½ ft. high, and has rather large, light-blue flowers; A. lævis and A. purpuratus are of slightly different shades, and grow rather taller. The pretty, somewhat Heath-like foliage of A. ericoides and A. Tradescanti, together with their numberless small white flowers, and rather elegant habit, render them desirable acquisitions. A. sericeus, with large blue flowers, and A. longifolius with handsome rosy-purple ones, are among the finest of the dwarf Asters; as seen at Kew, both species are about 1½ ft. high. Chrysopsis villosa, one of the commonest plants on some of the North American prairies, merits notice on account of its close bushy growth, and its abundance of pleasing yellow flowers. Coreopsis trichosperma grows 3 ft. or more in height, has finely-cut leaves, and flowers of a bright yellow. Diplopappus chrysophyllus, by the wall of the herbaceous ground, has inconspicuous flowers, but the neat, Heath-like foliage, as well as the branches themselves, are, as it were, dusted with gold.

coloured powder. Helianthus orgyalis, with small flowers, when its large size, 8 ft., is considered, is nevertheless extremely ornamental; its tall, unbranched stems are thickly set with linear, arching leaves, which give a remarkably graceful appearance to the plant. As a single specimen on a lawn this species would be admired anywhere. Pyrethrum uliginosum, from Hungary, has large white flowers, which so far have been uninjured either by frost or wet; it grows about 3 ft. or 4 ft. high, and is deserving a place in every select collection of herbaceous plants. The ample foliage and long succession of rather deep yellow flowers of Calceolaria Pavoni make it a welcome addition for the mixed border; it is far too gross a grower for bedding purposes; by a wall or in a suitable position it will grow 3 ft. or more in height; it is a native of the Andes of Peru. Polygonum vaccinifolium, the Whortle-berried Knotweed, is one of the most charming species of its genus; its numerous slender stems trail along the ground and root at the joints, the leaves often being nearly hidden by the copious spikes of bright rose-coloured flowers, which are produced almost uninterruptedly from August until November. In some parts of the Himalayas, at elevations varying from 11,000 ft. to 13,000 ft., this is frequently met with. For the front of rockwork, where it can get plenty of moisture at all times, this neat-growing little plant is a perfect gem; as a pot plant it succeeds thoroughly well in a cold frame.

Of late the Kew authorities seem to have devoted some attention to Crocuses, for, on referring to the "Botanical Magazine," we find that no fewer than eleven species have been figured in the last half-dozen volumes, whilst, during the previous quarter of a century, only two are represented. The autumnal species of this beautiful genus certainly ought to be more frequently met with in gardens. Crocus Salzmanni has a pretty pale violet perianth with a long tube; it is a native of clayey fields about Tangiers, and is known in some gardens under the name of C. tingitanus. One of the prettiest of the autumnal white-flowered species is C. cancellatus, from the Ionian Isles, Greece, and Asia Minor, in Greece ascending to 4000 ft. above the level of the sea; its pure white perianth and pale yellow throat are very attractive. The lilac-purple C. byzantinus, from Transylvania, is remarkable for the acute perianth segments, the three inner of which are only half the size of the outer; this is one of the earliest of the introduced exotic species, being figured by Clusius in 1601; in some gardens it is known as C. iridiflorus. C. speciosus has a wide geographical range (Austria, Crimea, Caucasus, and Northern Persia being the limits given by Mr. Baker in his "Systema Iridacearum"); it has beautifully feathered blue flowers, and is one of the finest and most distinct of all the Crocuses. The British C. nudiflorus and the Portuguese C. serotinus are also in flower. On the wall opposite the Crocus beds is Mühlenbergia adpressa, a pretty Polygonaceous climber from Australia and New Zealand; although the greenish flowers are inconspicuous, the small cordate leaves and the elegant habit of the plant mark it as a useful screen where a gross grower would be out of place.

The most striking hardy succulent now at Kew is Sedum spurium, from the Caucasus; its dwarf, creeping habit, and numerous fine deep rose flowers, ought to make it welcome on every rockwork. Of all the wall plants, Convolvulus Cneorum is now by far the most handsome, its white or flesh-coloured flowers and beautiful silky leaves causing it to be universally admired. It was cultivated in the Chelsea Garden in 1739, and is a native of Spain and the Levant. G.

Autumnal-flowering Crocuses.—C. zonatus has been in great beauty with me for the last few weeks, planted out in a frame. It varies a good deal in colour, some of the specimens being almost white; and also in the shape of the petals, some being narrow and pointed, and others broad and obovate. In general habit it closely resembles C. pulchellus, but its flowers are a brighter mauve; it blooms a fortnight earlier, and has a much larger and more flattened bulb. It is one of the hardiest and most floriferous of the autumn-blooming species, and increases fast. Like C. pulchellus and Boryi, it has white stigmas. During the last few weeks I have flowered the following, Croci, viz., C. nudiflorus, speciosus, pulchellus, pulchellus albus, vallicola, Clusii, hadriaticus, serotinus, medius, cilicicus (probably a variety of cancellatus), Boryi, lævigatus, and tingitanus; C. longiflorus, sativus, Cartwrightianus, byzantinus, Orphanides, cancellatus, ochroleucus, Damasceenus, and Peloponnesiacus are just showing above-ground. Autumnal Croci are very late this year, and, as a rule, in consequence of the cold, showery, sunless summer, they are not blooming well. I mean in future to grow them almost entirely under glass, planted out in a frame. The violent showers which we almost have at this time of year dash their delicate blooms all to pieces if they are planted in the open border.—H. Harpur Crewe.

THE KITCHEN GARDEN.

TOMATOES AND THE POTATO DISEASE.

The extraordinary destructiveness which the Potato Fungus has displayed amongst Tomato plants, not only in the present, but also in previous years, shows that it will be necessary eventually to secure the plants from climatic influences, if they are to be expected to produce healthy, ripe crops of fruit. It is one of the characteristics of the disease as regards the Tomato, that it seems chiefly to expend itself upon this plant after all food for it, in the shape of Potato haulm, has been destroyed. I think I am right in saying that it rarely affects the Tomato until September, whilst the chief mischief is wrought amongst the Potato crops at the end of July and during August. Either, therefore, this late appearance of it in the Tomato is due to the reason I have mentioned, or else it arises from the fact that, as with the Potato, so with the Tomato, the disease does not attack the plant until it has attained a certain degree of maturity. The real matter for consideration is the fact that the disease does attack the Tomato, although not until late in the summer, and if the entire crop is to be saved, some measures must be adopted to protect the plants from the action of atmospheric moisture, as it is through this only that the Fungus is started into activity. One thing to be done is to get seed sown very early and to have plants, as strong as can be had with safety, ready to turn out directly all danger from late spring frosts is past. Single plants in 5-in. pots would be better than two starved and stunted in 3-in. pots. In any case, a good, early start in the summer is of great importance, as upon that may hinge the saving of all the best fruit of the season. Their culture should not be too gross, as that induces a needless amount of growth, which does not favour the production of fruit. A good mulching about the roots, so that the moisture might be retained, is often of much more value than a quantity of rich manure worked into the soil. The restriction of the growth is, moreover, an important point in Tomato culture, as in this way the early-set fruits are sooner ripened, and the crop secured before the autumn rains induce disease. Still there remains in all large gardens the necessity of having Tomatoes in the open air as long as the season will permit; therefore, it becomes necessary to protect them in some way. In many places at this time of the year it is possible to have a number of plants growing in large pots standing in some early Vinery from which the crop has been taken, and the Vines probably at rest. Here a fair crop may be obtained until the end of November, and if, as in some places, the back wall of a Peach-house is covered with Tomato plants, there will be a fair supply all through the winter. In gardens where this convenience for pot culture is not available, plants put into pots and then plunged in soil in a frame might be tried, clean straw being used for the plants to creep over; but perhaps the most efficacious plan would be to set apart either some low wall or fence specially for the purpose. A length of 100 ft., about 3½ ft. in height, would produce a large crop for late use if the plants were put out early in June from 3 in. pots. As long as the summer heat and drought prevailed they would need no protection, but in September, when autumn rains began to fall, it would be well to be prepared for any disease that might show itself. This would be best effected by having a protection ready to be applied in the shape of a wide glass coping. In front of the wall, which should be 3 ft. 6 in. in height, stout Oaken stakes should be driven into the ground at intervals of about 3 ft. apart, or more, as may be thought necessary; their tops should be set even, about 3 ft. from the ground, and at least 10 in. from the wall. Upon these, along the entire length, should be nailed a stout strip of wood. The glass protectors should be 3 ft. in length, and hinged to a piece of wood fastened on the wall so as to be opened or let down as required. All, therefore, that is now needed, are some small iron swing hooks to drop into eyes fixed on the front edges of the lights, one at either end, and, when thus secured, almost any amount of wind might be defied, whilst no rain could get at the foliage of the plants beneath. Farther still, if, when sharp frosts occur, mats were thrown over the glass, and allowed to hang down to the ground, it is possible that in this way the plants might, during some winters, be kept in bearing until Christmas. The northern side of a wall of this kind need not be idle, as here could be obtained fine late crops of Red and White Currants or Gooseberries, and during other periods of the year the glass protectors might be stored away in some dry place in a small space, and, with an occasional coat of paint, would probably last for many years. A. D.

DISEASE-PROOF POTATOES.

I regret to find currency again being given to the exploded notion that there are disease-proof Potatoes. Some may be more robust than others, and therefore more capable of resisting the attacks of the Potato Fungus, but all are liable to its attacks. Varieties of Potatoes that are much diseased in some localities, in others are often comparatively healthy, and with the variations of seasons are also found variations as regards the attacks of the disease, making the crop to be lifted of any one kind or sort a matter of uncertainty. In my own case there has been much disease this season among some fifty or more sorts, when grown in stiff cold land, and well manured; whilst as regards the same number of kinds grown in soil of a light, porous character, with a light dressing of manure, there has been little or no disease, and the kinds might fairly have been said to be fairly disease-proof. There does not, however, exist such a thing as a disease-proof Potato. Flourball has often been specially mentioned for its disease-resisting qualities, and such appeared to be its characteristic until the trials, so widely conducted by the Royal Agricultural Society, showed conclusively that it was no more disease-proof than others. In my own neighbourhood, some four years ago, a market gardener grew a grand crop of Flourball, finding scarcely one diseased tuber. Next year he planted with the view of lifting 10 tons and got about 4 tons, the crop being terribly diseased. Another bad crop last year induced him to alter his opinion; and yet he started with the firm belief that Flourball was a disease-proof Potato. Throughout this neighbourhood, Regents were badly diseased; but, nevertheless, I have just seen a fine crop of them lifted where the percentage of diseased tubers was very small. This exemption is accounted for by the fact that this field was planted late, and the haulm had not obtained maturity when disease suddenly developed itself. A month later in planting this year saved the crop. Perhaps another year late planting might have a contrary effect, as in some seasons the earlier crops escape, and the late ones get diseased. I find, for instance, that Victoria is this year coming out very clean indeed, close by where Regents have been bady effected, but this immunity is this year more the result of a later period of ripening than owing to any other cause, as last year the Victorias were very badly diseased. It is right that Potato growers should make public the fact that this year certain sorts have produced clean crops, but next year they may have to tell a different tale. There are other considerations which should guide growers in relation to selecting sorts for planting; one kind, for instance, that may have the reputation of resisting the disease, may yet produce Potatoes that no one would care to eat, and if this be the case what gain is there in having such a crop? It may be said that a crop of indifferent eating Potatoes is better than none, but if it can be shown that a clean and sound crop of tubers of the finest eating quality can be had if the grower be content with small Potatoes, is it not better to have that than a lot of course tubers? If, however, good eating Potatoes of fair size be desired, it is not necessary to grow Flourball, or that much more uncertain kind Late Rose. Far better than either of these are Schoolmaster, Magnum Bonum, Victoria, International Kidney, and several other extra robust kinds none of which are disease-proof, but the disease attacks them lightly if planted in poor, light porous soil. The haulm is then more firm and woody, and less influenced by the Fungus than when robust. The tubers are of medium size, and of really good quality. I disagree with the assertion that a crop of small Potatoes is indicative of bad cultivation. If it be found that large tubers are generally diseased, and small ones generally sound, it is obvious that the latter are greatly to be preferred. Small Potatoes, however, need not necessarily mean mere "chats"; tubers the size of a hen's egg would ordinarily be termed small, and yet they are often excellent for table use. I am glad to be enabled to say that under the treatment just recommended I have this season lifted the best crop of medium-sized tubers I have ever had. If I had grown my Potatoes in rich land, with plenty of manure, I should have had abundance of large tubers, and also plenty of disease, but under poor cultivation I have a clean and good crop. I have further found that early lifting is of little value if the disease has once attacked the tubers. It is better to let the few bad ones rot in the ground than to have them decaying in the store and poisoning the entire stock. A. D.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Taylor's Richard Gilbert Pea.—This is a promising mid-season and late Pea, the surprising vigour and sturdy growth of which seem to give it a power of resisting mildew far above the average. I gathered a pod from a long row growing at Burghley on October 10 that measured 4½ in. long, and contained eight very sweet, good-flavoured Peas, and there were hundreds of similar and later pods, as well as flowers, still being produced, whilst Omega, which is generally looked upon as a good late kind, growing alongside of it, was quite exhausted and overrun with mildew. Richard Gilbert grows from 3 ft. 6 in. to 4 ft. high.—E. Hobday.

Two Useful French Beans.—One is Flageolet, which I had sent me two years ago from Paris. In growth it resembles Osborn's Forcing, but it is more robust; when young, the pods are used like those of the ordinary French Bean; as they get older they supply the place of green Peas, and when they are ripe they may be used like Haricots; the Bean itself is about the size of Osborn's Forcing, and of a greenish-white in colour. The other, which I had sent from Hamburgh, is a Runner Bean resembling the Premier in growth, but the pods are more of a seedy character; these we use in the same way as the other. The Bean of this variety is pure white, and about the same size as that of the other, but rounder. This kind continues bearing like the Scarlet Runner, provided the pods be kept picked as their contents reach the size of green Peas.—W. W., *Eaglehurst.*

Endive for Autumn and Winter Use.—In wet seasons tying up Endive is of little use, as it is sure to become rotten at the heart before it is sufficiently blanched. To prevent this I find it a good plan to double in the outer leaves and place a clean blue slate on the top of each plant; the slate is less likely to harbour slugs or vermin than wood. If the plants be on a sloping border so much the better, as the slates will throw off the rain, blanch the Endive beautifully, and make it more crisp than if tied up. Another good plan, in the case of late Endive, is to take it up with a good ball of earth and well tie in the leaves, selecting a dry day for the operation; then pack the roots in mould in a light open shed, or, better still, at the foot of a south wall, letting the roots into the ground; then place an inclining board over them. This will make them white and preserve them a long time. Endive, thus treated, will have white hearts larger than a man's fist, and these, with a little Mustard and Australian Cress, which can easily be obtained at all times, make a good salad in autumn and winter, when Lettuces and other things are scarce.—C. H. Kitching, *Cokethorpe Park, Witney, Oxon.*

Tomatoes Grown at Burghley.—I have sent specimens of Jackson's Tomato ripened out-of-doors. The late glorious weather has done wonders for everything out-of-doors in this district. Peach wood is as red as that of Dogwood, and as hard as Ivory. Strawberries for forcing are well plumped up, and showing the autumnal colouring of the foliage; we may therefore hope to have a bright year in 1878.—R. Gilbert. [The specimens sent are the finest we have ever seen at any time of the year.]

Parsley amongst Broccoli.—I know of nothing in a small way so useful as Parsely. Many take it up and grow it under glass, but no coddling is needed. When we plant our Broccoli in July, we take a little Parsely seed and sow it broadcast amongst them. The young Parsely plants grow with the Broccoli, the large leaves of which duly protect them in the winter, so that a good supply is always at hand.—R. Gilbert, *Burghley.*

Onion Juice v. Stings.—The "Berliner Presse" states that the pain caused by the sting of a horse fly may be instantly alleviated, and the swelling which often accompanies it speedily reduced, by simply rubbing the injured part with the juice of an Onion.

Snow's Broccoli.—We are just now (19th October) busily employed taking up this Broccoli, and laying it in on a west border thickly, in order to preserve the heads from frost, and clear the ground on which it grew for digging. When laid down 9° or 10° of frost do not harm it; but should any sharp weather set in we cover it up with Bracken, which makes all secure.—R. Gilbert, *Burghley.*

NOTES OF THE WEEK.

Romneya Coulteri.—Dr. Moore tells us that this fine plant is yet in flower at Glasnevin, the recent fine weather having encouraged it. It forms a bush from 5 ft. to 6 ft. high, and will probably prove a valuable plant for mild districts.

Dasylirion glaucum.—There is now in bloom at Sudbury House, Hammersmith, a fine plant of this Dasylirion, the flowers of which are all male. The spike measures 8 ft. in height, and is a singular yet really beautiful object.—J. Croucher.

A Graceful Palm.—One of the most graceful Palms to be found in the Holloway Nurseries is Cocos australis. Its fronds, which are from 2½ ft. to 3 ft. in length, assume a drooping habit, and are furnished with light, long, narrow, Grass-like leaflets, nearly 1 ft. in length. On pedestals, or similar supports, or for table decoration, this plant will eventually become a favourite.—C. S.

Silene Elizabethæ.—Messrs. Backhouse, of York, have received a large importation of this lovely Catchfly. In its native habitat it is found growing in shattered limestone. For cultivation, a mixture of about one-third good loam, one-third peat, and one-third broken stones will suit it admirably. It should be planted in such a position that the roots can penetrate back, say from 18 in. to 24 in., into congenial soil.—R. P.

Fruits in Covent Garden.—Large, well-ripened fruits of the Prickly Pear (Opuntia) are now plentiful in Covent Garden Market, and appear to be in good demand. Pomeloes and Shaddocks and Tangierine and Brazilian Oranges are also abundant. Fine examples of Marie Louise and Duchesse de Angoulême Pears of French growth may likewise be seen in several of the shops in the Central Avenue, associated with the American Lady Apple, finely-coloured fruits of which have just made their appearance. We also noticed fruits of the true Service tree (Sorbus domestica) exposed for sale this week. This fruit is not often met with in our markets; indeed, Phillipps says that it was in his days "as rare in the London markets as the fruits of the most distant parts of the world." It is reddish-brown in colour, with small, white spots, and somewhat resembles the Medlar in flavour, but it is more austere and astringent. The tree although very handsome, is not very frequently met with. A solitary example existed for many years in the centre of Wyre Forest, in Worcestershire, but this was burnt down in 1862. The fruit is not gathered until late in the autumn; it is wiped dry and laid on dry straw, and spread out until it becomes mellow and fit for use, which is usually in about a month after it has been gathered. It is eaten in Italy and the north of France, and is considered useful in cases of dysentery.

The Colorado Beetle and its Enemies.—The Colorado Potato Beetle has at last found its match in the shape of a mite parasite. Prof. Riley, at a meeting of the St. Louis Academy of Science, exhibited a Potato Bug which was so completely covered with a mite parasite that the point of a needle could not be placed on any part of the Beetle's body without touching one of the parasites. He estimated the number of mites at 800. The Beetle has been attacked by these enemies and killed. It seems to have a number of natural enemies, such as the toad, the rook, the rose-breasted grossbeak, and domestic fowls. There are no fewer than twenty-three insect enemies that attack and kill it.

Desfontainea spinosa in Scotland.—On a lawn attached to one of the villa gardens at Dunoon, Firth of Clyde, may be seen a specimen of this fine evergreen shrub, forming a dense bush, well furnished with branches; of these, some of the principal ones shoot up from the root to a height of fully 9 ft., and their spread at 5 ft. from the ground is nearly 20 ft. in circumference. It is standing within 100 yards of the sea, but protected from the breeze by a wall and a narrow belt of trees, by which it is partially shaded. The soil in which it is growing is a rich, heavy loam, and the ground is naturally damp. It is in luxuriant health, and in the fifteen or sixteen years during which it has occupied its present position, it has never suffered materially, if at all, from frost. For many years past it has flowered very profusely, beginning about the middle or end of July and continuing till late in the autumn, but it is generally at its best in the end of August. This summer it has been remarkably fine, and when I saw it on the 25th of September it was literally covered with fruit and flowers in all stages of development. For the benefit of those who are either unacquainted with this plant, or who have not seen it in flower or fruit, I may add that it was first introduced to this country from Peru nearly thirty years ago, that it grows naturally to a height of about 10 ft., and that in foliage and general aspect it somewhat resembles a Holly. The flowers, which are tubular and pendulous, measure from 1 in. to 2 in. long, and arch out; they are bright scarlet, tipped with gold. The fruit is about the size of a small Gooseberry, and when ripe is of a bright yellow colour. Surely so beautiful and valuable a shrub as this is worthy of wide cultivation, especially in the milder or sea-side districts of the country.—Omega.

Ismene calathina Out-of-doors.—This plant, which used to be grown in the stove, has been planted out for the past five years at Glasnevin. It has proved quite hardy, and has flowered well this year.

Plants in Bloom at Holloway.—In Mr. Williams' nursery, at Holloway, many plants of an attractive character are now in bloom. In the Orchid-houses is a fine display of Oncidium varicosum and O. Rogersi, and the curiously-spotted O. tigrinum, the flower-spikes of which droop gracefully among green-leaved Palms and Ferns, with which they are associated. The large, white, sweet-scented flowers of Dendrobium giganteum are also very attractive, as are also those of the showy Odontoglossom grande and O. Alexandræ. Large plants of Dendrobium chrysanthum are furnished with strong pseudobulbs, each of which bear from thirty to forty rich golden blossoms, which contrast strikingly with those of the beautiful Pleione Wallichiana and P. lagenaria (sometimes called Indian Crocuses), and which are embedded in a mass of Club Mosses and small Ferns. Small plants of the new Abutilon rosæflorum are loaded with blossoms, and a bank of Calanthes will shortly be finely in blooms, their flower-stems being already thrown up in large numbers.—S.

The Fruits of the Service Tree.—Large quantities of these are sold in the streets of Constantinople during the autumn, under the name of *Kiziljicks*, i.e., Little Reds. They are plucked before they are ripe, that is to say, when they are bright red. The first time I tasted them, thinking from their appearance that they were cooling and luscious, I crammed a couple into my mouth expecting a treat, but was soon undeceived. In their unripe condition they are the very concentration of all that is acid and astringent, so much so that a Turkish mother will call her peevish, crying baby a *Kiziljick.* Their flowers must be something like that of the fruit Tamarind, so graphically described by Mark Twain, for my mouth, like his, assumed the form of the stalk end of a Tomato, and preserved it for several hours. With a certain amount of sugar, they make a deliciously-refreshing drink for use in hot weather. They are eaten in large quantities by all the Ottomans, both Christian and Moslem, as an infallible preventive of diarrhœa. Plucked when they are just losing their bright red hue they make an excellent preserve, which the Greek and Armenian housewives consider to be a valuable cure for sore throat.—C. W. Quin.

The Pistacia Tribe.—The Pistacia Terebinthus, described by "J. R." in an article on "Pistacias and Their Uses," in The Garden (see p. 355), is a very noble tree, and, judging from the way in which it bears the winter snows and frosts on the shores of the Black Sea, the Bosphorus, and the Sea of Marmora, ought, I should say, to be perfectly hardy in England. One of the finest specimens I ever saw is on the shores of the little Bay of Therapia. It generally grows to from 40 ft. to 60 ft. high, and often reaches 8 ft. or 9 ft. in girth. The trunk and habit closely resemble those of the Oak, but the leaves are long and pinnate. As the autumn advances, the dark green leaves become thickly covered with crimson galls, which, with the purplish-brown berries, form a very pretty contrast of colour. The true colour of the fresh Pistachio kernel is not greenish-blue but yellowish-green, and the inner covering dark purplish-crimson. The shape of the Nut closely resembles that of the mussel, and is of a delicate buff. They are consumed in immense quantities in Constantinople, the ground of the numberless open-air cafés and public gardens being literally paved with their shells. They are scalded in salt and water, to cause the two valves of the shell to open slightly. The Pistacia Lentiscus deserves to be called the Upas Tree of Turkey, its gum being the base of the pernicious liquer called by the Greeks "mastika," and by the Turks "raki." The common raki, which can be bought at about 1s. per pint, is made by distilling raw Boston rum from Gum Mastic, Aniseed, and other herbs. Part of the gum distils over so that when water is added to the spirit it becomes milky; it is, in fact, very weak water varnish. It is the almost universal custom in Turkey to take a small glass or two of this liquer before dinner, as an appetiser, with a shrimp, a raisin, a scrap of sausage, or a pickled Gherkin added as a zest. The rising generation, both Christian and Moslem, are far too partial to this pernicious spirit, which makes an end of its victim as speedily as the French absinthe. The best quality comes from Chio, where it is distilled from the finest Gum Mastic and the lees of the famous Chian wine. The picked gum is largely used for chewing by the Turkish, Greek, and Armenian ladies, more to pass the time than for any sanitary reason. I am assured by several of the first dentists in Constantinople that mastic chewing strengthens and whitens the teeth, ladies who have indulged in the practice from childhood being rarely sufferers from toothache.—Q.

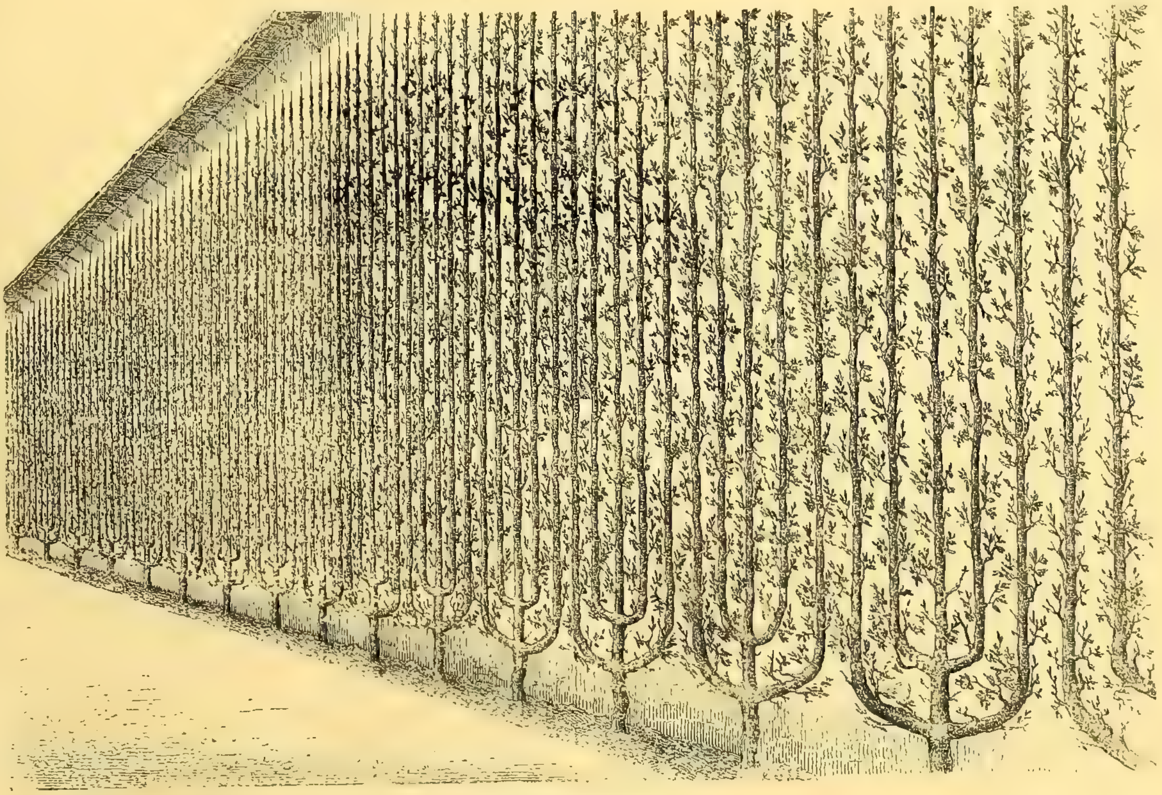
THE FRUIT GARDEN.

CULTURE OF HARDY FRUIT TREES.

(*Continued from p.* 383).

Grafting and Budding the Stocks.

FROM a practical point of view grafting consists in growing on a wilding of the same species a portion of a branch or twig or a bud of a given sort or variety, cut in different fashions according to circumstances, so that the vital parts of each come into intimate contact. To do this properly a certain amount of manual dexterity is required, which is only to be obtained by much practice and many failures. It is not necessary to begin our experiments with valuable subjects, but grafts and buds of any common variety may be tried until success is attained. Grafting with almost the certainty of success is acquired much more easily than is usually supposed. If absolute precision in making grafts were really required, hardly five per cent. of those made even by the most expert grafter would succeed. Before beginning to work it is important to clearly understand that success depends on the proper choice of stocks and scions, the time for grafting, and the particular method of grafting adopted.



Unity in fruit-tree planting.

*Wall of Easter Beurré Pears, 14 ft. high: **Photographed** in the **Potagerie** at Versailles in April of the present year. It illustrates the convenience resulting from cultivating one variety in a carefully-considered position; also, the advantage of growing, in some quantity, one variety of the highest value for late winter and spring use.*

THE CHOICE OF SUBJECTS.—It may be taken as a general rule that the operation of grafing succeeds best the more closely the stock and scion are related to each other by natural affinity. All stories of miraculous grafting of Roses on Ivy, or on the Vine, or the Cherry tree, or on the Pear, or the Elm, are simply to be looked upon as worthless tales. On the other hand, it must be acknowledged that certain stocks seem to be more suitable to certain scions than others, although the character of the variety grafted is, speaking generally, in no way changed, preserving most of its special characteristics without partaking of those of the stock. The principal stocks used in grafting for the orchard are the following:—

PLUMS.—These stocks are obtained from seedlings of strong wooded varieties such as St. Catherine and the White Damson, which are generally used for grafting Apricots and Plums for every description of growth, and for standard Peaches. The Myrobolan is a short bushy tree easily grown from cuttings. We mention this stock in order to disapprove of the bad habit of growing it as a tall standard for grafting the Plum and the Peach. The Myrobolan soon reaches its proper height, which is somewhat low, but its branches are always small and as hard as iron. Grafts form on it a large ring at the place of junction. Beyond three or four years from the time of grafting it cannot be successfully transplanted. The Almond sown from the sweet variety with a hard shell, grafted near the ground with a Peach, will give a tree with a tall stem in warm, deep soils situated in sheltered positions. The Almond is but little used as a stock for Peaches, and it is much better to raise Peach stocks from good seed, which after all, are the best stocks for Peaches growing out-of-doors. The wild Cherry forms excellent stocks for tall standard Cherry trees. It is obtained from the seed of the wild or some good sweet cultivated variety. Stocks with pale bark are mostly chosen, the dark varieties being shorter-lived. Seedlings from the acid Cherries are generally weak and sickly. There is no need to double-graft the Cherry except in the case of ill-grown subjects.

The Quince may be grafted on its own stock when it is grown on the edges of ditches which surround many orchards. It resembles the Medlar in this respect. Its principal use is as a stock for half-standard Pears with a pyramidal crown (fig. 8), which may be used for temporarily planting intermediately in damp situations. When trees thus grown show signs of decay, they may be partially restored to health by making longitudinal incisions in the base of the graft, which must be covered up with earth, as shown in fig. 9. As an exception, the Quince is sometimes used for tall standards with general success, as far as regards strong varieties, provided they are grafted close to the ground. For this purpose the Portugal Quince is generally chosen.

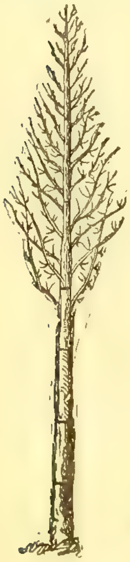


Fig. 8.

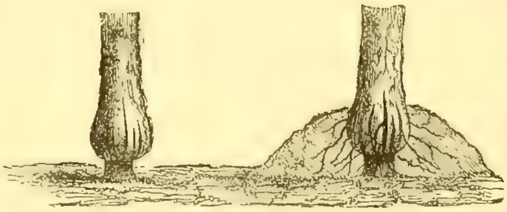


Fig. 9.

The Pear requires a deep, dry, warm soil, and an open and airy aspect; its roots penetrate deeply into the ground, and they dread stagnant water, except the graft has been made low down on a Portugal Quince stock, which seems to thrive wonderfully in damp and even in marshy places. Pears grafted on the Portugal Quince stock are extremely rare, but from what has already been said, they may be used in situations in which ordinary subjects would speedily become sterile. Even when grown as a tall standard for temporary intermediate planting, it will be found a most useful fruit tree. Many excellent varieties, such as Beurré d'Amanlis, Conseiller à la Cour, Beurré Sterckmans, Double Philippe, and others, form strong and prolific trees when grown in this way, even in a damp soil, provided it be kept well manured. These trees, it is true, are not very long lived, but they bear early and abundantly. They ought to be planted pretty close together. By taking advantage of the peculiarities of the Pear grafted on the Portugal Quince, situations which are only fit for Osier beds may be converted into fertile Pear orchards. The wild Pear is the most frequently used for the standard Pear tree for all descriptions of soil, provided they are not too damp. Grafted on large Hawthorn stocks, the Pear lasts a long time in good soil, is a prolific bearer, and throws out but a moderate amount of shoots and leaves.

Free Apple stocks are useful for tall standard Apples.

Good varieties of Sweet Chestnuts and Walnuts may be grafted on stocks of their own varieties.

Choosing the Scions.—This part of the art of grafting may be compared to a vast field of experiments, in which an immense number of experiments, researches, and observations are being continually carried on, but in which there still remains an immense deal to learn. The following directions must be strictly followed in the case of tall standards growing in open places, for these will receive less care, and will be more subjected to external influences than espaliers, and should, therefore, have lost as little as possible of their primitive vigour. We must not, therefore, accept the first scion that comes to hand as being fitted for every purpose. The scions should be taken from healthy trees, which, although old, are still making good wood, and which thrive well in situations away from shelter of every sort. The scions themselves should be cut from moderately vigorous shoots a year old. In case of necessity, they may be in their second year, and will often produce good trees, especially pipped fruit, such as Apples and Pears. Two-year-old scions are recommended for soft-wooded trees, such as the Mulberry and Walnut. The necessity for taking scions from healthy trees only, requires no discussion, it having been proved, times out of number, that a healthy scion, taken from an unhealthy stock, will inherit the weaknesses of the parent stock. As regards the second point, the age of the scion, it must be observed that a watery shoot in which the wood is not quite mature, or scions taken from young trees, are liable to yield but little fruit. The older the tree, therefore, within certain limits, other things being the same, the more likely is the scion to be healthy and prolific. By taking this precaution, we may often obtain tall standards, bearing fruit, which it would have been impossible to obtain from scions cut from young trees, owing to their not being sufficiently hardy to bear the weather. Grafting, it should be understood, although it makes the tree more prolific and the fruit larger and of finer flavour, also leads, ultimately to decay, and the more frequently a tree is grafted, the sooner will it surely, although imperceptably, degenerate and perish. It results from this that after a certain time, a variety will degenerate through being continually grafted, and will fall away from being a choice orchard fruit to be but little cared for. The same reasoning applies to the third point. Whatever is against nature, such as cultivating fruit trees as espaliers, against walls, or under shelter, or grafted on other trees, occasions a weakening of the natural forms of the tree, and engenders weaknesses which gradually increase, and at last become incurable. As far as the choice of the most suitable kind of scion goes, a moderately vigorous shoot must be chosen, otherwise the resulting tree will be deficient in bearing properties. On the same branch we may meet with many different varieties of shoots, which will give rise to as many different varieties of trees; considerable care and judgment must therefore be exercised in making our choice. The scions should be cut from the parent tree before the least trace of growth has shown itself. They must not either be cut too early, because during the rest of the tree they are much better on it than off. The scions after being cut off, should be tied up in bundles, and stuck into the ground to the depth of $1\frac{1}{2}$ in. or 2 in. The situation should be well sheltered, but not too much so. Scions which have been entirely covered up with soil, or which have been preserved in cellars, are very tender, and it is a long time before they become acclimatised to the open air when they are grafted on the tree. The time for grafting is indicated by the tree itself upon which the graft is to be made. Grafting should be performed as soon as the sap begins to rise, which may be told by the swelling of the buds. It is not prudent to begin grafting too early, but when much work is to be done the professional grafter is often obliged to begin sooner than is advisable. The grafting of stone fruit may be begun before other varieties. Lately a fashion has come in of grafting at the end of autumn. With a view to test the value of this method, M. Burvenich has made several experiments on various fruit trees in the months of September and October. With the Apple and Cherry he was perfectly successful; in fact, he gives it as his opinion that the Cherry should never be grafted at any other time. As a general rule, however, the scion ought to be dormant, and the stock in full growth. Grafting, if possible, should never be performed when the wind is in the north or east, not only because the cold would be calculated to injure the graft, but because those winds are of a drying character, which greatly diminishes the chance of the graft taking, through becoming dried up after the operation has been completed.

Methods of Grafting.

It would take up too much time to describe all the different methods of grafting now adopted, more especially as M. Charles Baltet has published an exhaustive book on the "Art of Grafting." It may, however, be useful to describe a few of the methods applicable to fruit trees for the sake of those who have not M. Baltet's work. The most usual methods of grafting fruit trees are the following:

Cleft Grafting.—This is a very old method, and, although not much practised now-a-days, ought always to be looked on as a good method of grafting. The stock is cut off level, as in fig. 9, at a certain height from the ground, taking care, however, to choose a portion which is clean and healthy. If the graft be made on the branches, the cut should be made close to the body of the tree, or if it be a low graft, it should be made from 2 in. to 3 in. above the ground. The raw surface of the cut should then be smoothed, and a slit made in it as shown in fig. 10 with a grafting-knife, the depth being regulated by the thickness of the stock. A portion of the scion, bearing at least two good buds, should then be cut off and cut slightly thinner on both sides at the part which is to be fixed in the cleft, the upper end being cut off short, as shown in fig. 11. The cleft should be so wide as to take the scion easily without wounding it, but sufficiently tight to be in contact with it in several places. This being done, the whole is bound up to keep the two together, and to prevent the cleft from opening later on. It is not necessary to place wedges in the cleft to prevent the scion from being crushed. Instead of being of use this practice often prevents the proper union of the surfaces. Stocks of less than ¾ in. in diameter will only carry a single scion. Above that size they may be increased in proportion, as shown in fig. 13. Cleft grafting, as described above, is only applicable to pipped fruits, Plums, and Cherries. Stocks for the latter fruit should be of medium thickness. In 1871 M. Burvenich made several experiments on a peculiar form of graft, consisting in the insertion of a three-sided scion in a corresponding cleft, as shown in fig. 14, with excellent results. This mode of grafting is not so difficult as one would suppose. One advantage is, that in this mode of grafting the stocks which have not taken may be afterwards used for cleft grafting. The triangular method is a middle course between cleft and crown grafting.

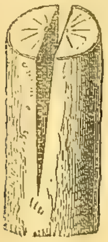


Fig. 10.

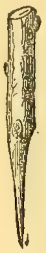


Fig. 11.

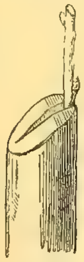


Fig. 12.

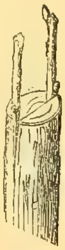


Fig. 13.

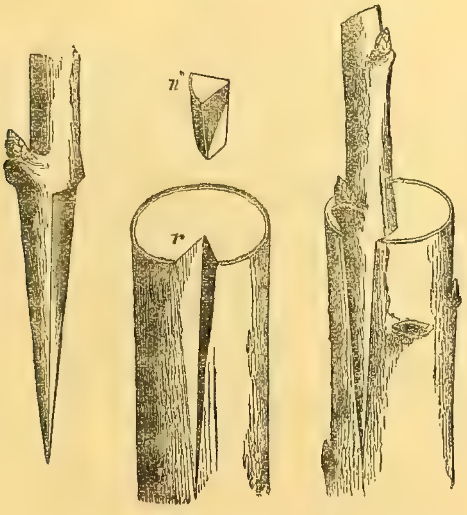


Fig. 14.

Crown Grafting.—This mode of grafting may be practised later in the season than cleft grafting, for which reason it is much used, more particularly for thick stocks and branches, especially in the case of stone fruit. Crown grafting should not be used until the bark separates easily from the wood; the branch or stock is cut off straight, or at an angle, as in cleft grafting; the wound is then smoothed down, after which a slit is made in the bark, which is separated from the tree by the grafting-knife, and the pointed scion is slipped in (fig. 15). In some trees the bark separates so easily from the wood that the pointed scion itself may be used to effect the separation, in which case there is no need to use the grafting-knife. The scion, as shown, should be smoothed down on the side opposite to the bud, a shoulder being left at the upper end of the cut. A thin slice of bark is also cut off the scion on the side on which the lower bud is found, so that the raw surface may be in contact with the inside of the bark of the stock. If the bark of the stock be sufficiently strong, the handle of the grafting-knife may be inserted between it and the wood without making any incision; as the handle of the knife is withdrawn the properly-trimmed scion is gently pushed into its place. When the bark adheres to the wood very strongly, a piece may be cut out, as shown at *d*, in fig 16, so as to hold the scion cut to the same size, as shown at B. The whole is then tied up, but not too tightly, for fear of injuring the bark.

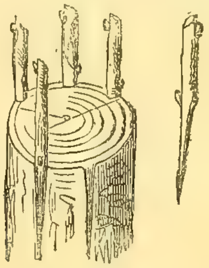


Fig. 15.

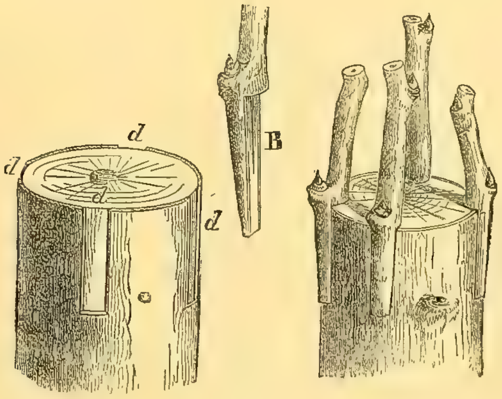


Fig. 16.

Regrafting Old Trees.—Old trees which have not been grafted for ten or even twenty years, may be readily regrafted with varieties of a better quality than those they have borne, always provided they are sufficiently healthy and strong. From the above remarks it will be clear that the best system of grafting large branches is by crown grafting, the same method being adopted as in the case of ordinary stocks. When the trees are very old, certain precautions must be taken. As far as regards the period of grafting, it ought to be remembered that the movement of the sap and the separating of the bark and the wood taking place later in old trees, their regrafting ought to be deferred until the buds are on the point of expanding. The scions used for regrafting old trees should be young and vigorous; the number of branches to be grafted depends entirely on the age and health of the tree; this is a matter of individual judgment. Figs. 17, 18, and 19 will give an idea of how far the pruning process ought to be carried. The best time to cut the branches which it is intended to regraft is the end of February or beginning of March, not precisely in the place where the graft is to take place, but some 10 in. or 15 in. higher up, so as to find the part of the branch which is to receive the scion full of sap when the period of grafting arrives; the branches are cut off as near the trunk as possible, as grafting on long stumps is to be avoided for several reasons. First of all, the scions do not grow so vigorous, besides which, long shoots frequently grow between the trunk of the tree and the scions, robbing them of their nourishment, and frequently becoming confounded with them. The thickness of the branch ought to determine the number of scions to be inserted; they should be at least from 1 in. to 1¼ in. apart. In grafting the scion on these thick branches, it is better to place the lower bud towards the centre of the branch instead of towards the bark, as in grafting an ordinary stock. In the case of the inclined branches, the scion should be grafted on the upper side; if there are two scions, one on each side, and all round if there are a larger number. The small branches which grow on the grafted portions of the old tree may be allowed to grow or not, according to circumstances. In the case of trees which are already well grown, and of which only a few of the branches require regrafting, it is perhaps better to allow some of the old branches to remain on; they can at any time be pruned down if it should be thought necessary. It is always better to choose upright branches for pruning away in preference to those which are horizontal or inclined, as the former tend to starve the scions by absorbing too much sap. The year after the old trees have been regrafted, provided the scions have all taken properly, the whole of the superfluous wood may be removed. The Cherry and the Plum will bear regrafting up to an advanced age, as long as the thinner branches are selected for the purpose. Regrafting is a very practical method of renewing the health of the Apple and Pear. There is, however, a great difference between them in this respect. Pear scions may be grafted on branches fully double the size of those of the Apple tree, as large, in fact, as a man's arm.

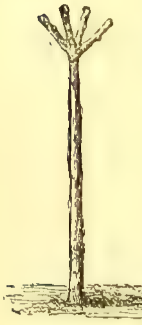


Fig. 17.

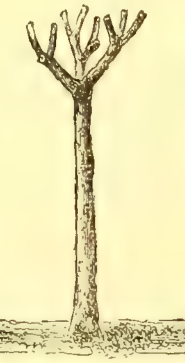


Fig. 18.

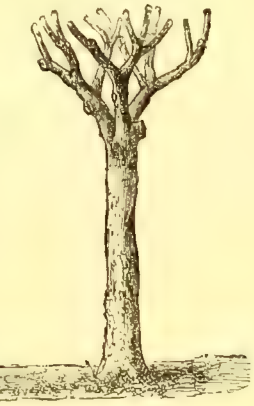


Fig. 19.

Scions may also be grafted on trees without cutting the branches. At the proper season for crown grafting, an incision, in the form of a ⊤, is made in the place where it is desired to graft the scion, just as in the operation of shield-budding. The scion, which ought to be a little longer than usual, and slightly curved, if possible, is, as in crown-grafting, slipped beneath the bark, tied, and luted. It would be wrong to suppose that old trees regrafted take as long to produce fruit as young ones, for we have frequently seen old trees regrafted bearing abundance of fruit within three or four years. Weak varieties of Pears and Apples, which have only been grown with an immense deal of difficulty—more particularly as regards the formation of the crown—will quite change their habit if grafted on a vigorous stock. The following varieties of Pears gain greatly by this method of treatment:—Josephine de Malines, Beurré Dubuisson, and Marie Louise; on Apple trees, the Belle Fleur de Brabant; and on Cherries, the Royal Early, as well as many others known for the strength of their growth.

(To be continued).

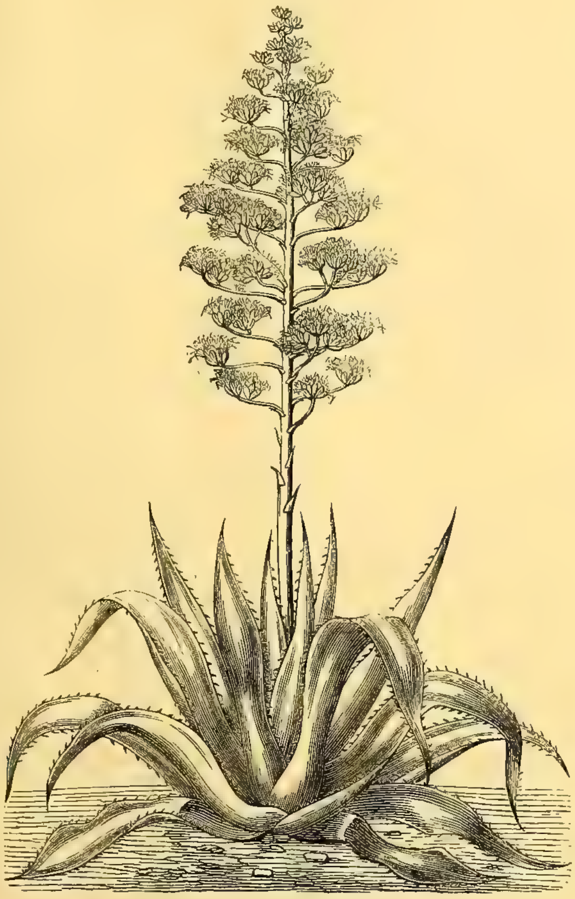
THE INDOOR GARDEN.

THREE ALOES.

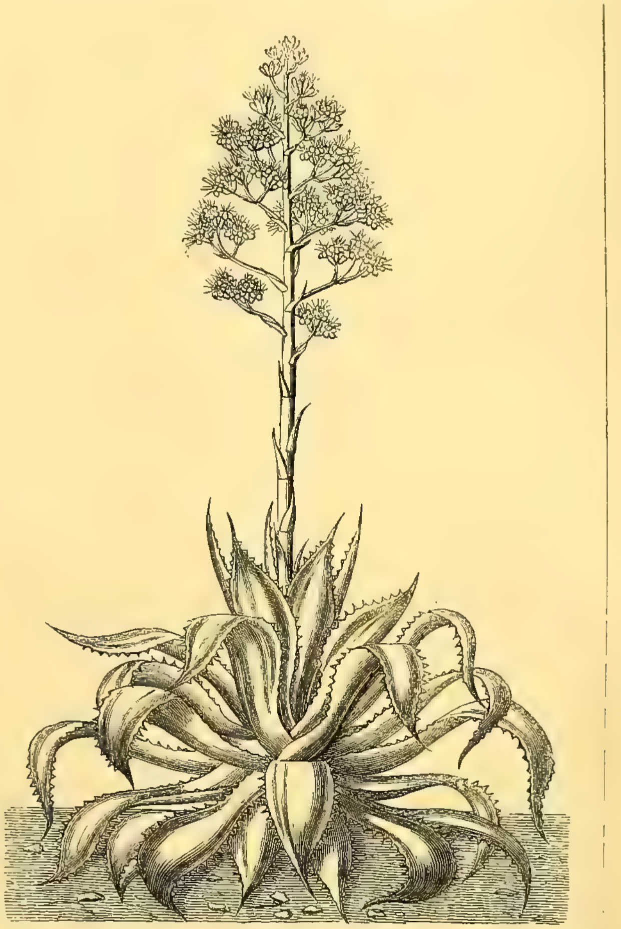
Agave densiflora.—This is a good and distinct Aloe, of a bright, shining green-colour, and moderate as regards growth. When old the marginal spines are dark brown, but when young they are of a chestnut colour. It generally flowers in the seventh or eighth year, and reproduces itself by throwing up a new crown, which may be left intact, when it will soon take up a central position, pushing the parent stem on one side. It varies when raised from seed, and, therefore, there are in collections plants of it under different names, such as A. Wolkensteini, A. chloracantha, and A. serrulata. Plants belonging to this section of Agaves never appear to throw up suckers.

Agave densiflora.

Agave americana.—This, the most common of all the Aloes, grows to a height of from 6 ft. to 10 ft., and its flower-spike often reaches from 18 ft. to 25 ft. In colour the foliage is glaucous green, but there is a variegated variety of this species, the margins of the leaves of which are yellow, and another variety, called striata, with yellow striped foliage; there is a third variety, too, called medio-picta, which has a band of yellow running down the centre of each leaf. This is, perhaps, the most beautiful form, but all four are grand plants for associating with architecture on terraces in summer, thereby giving nobility to a conservatory as well as setting off other plants to advantage. The old story that the American Aloe flowers once only in 100 years is now pretty well exploded. Under pot culture it flowers according to the treatment which it receives, at from fifteen to twenty years of age; so long as frost is kept from it it is safe. One point regarding Agaves is important, and that is that the foliage be kept perfect; when a leaf is partially decayed, cut it off close to the root, and whenever a plant gets old and has many stumps of leaves on it, cut it quite clear off its roots in June and set it on a new tub or pot. This may be safely done, and thus the old base is got rid of and new vigour is at the same time infused into the plant.



Agave americana.



Agave Scolymus.

Agave Scolymus.—This is a moderate-sized plant, of excellent habit, and beautifully adapted for vases. Its largest leaves are but 2 ft. long, and glaucous green in colour. It closely resembles A. Verschaffelti; in fact, I believe the two to be only variations of one species. In a young state these two Agaves make excellent centres for beds. Agaves, it is said, are always alike, but that is not the case, for I will guarantee that a person who saw a plant of A. Scolymus three years old would not know it at six, as it not only changes in habit, but the tint of foliage and spines also change, and the same thing happens in the case of other Agaves.

Small Plants of Habrothamnus elegans.—These are invaluable for autumn decoration. Some say that plants of this Habrothamnus are only suitable for pillars and walls; also that they should not be stopped until after the flowering season, when they can be cut hard back; but I prefer small plants for autumn use to using them as climbers, also that they should be stopped for this purpose, as it causes them to flower earlier, and keeps them in good shape for the conservatory, greenhouse, or table. Like many more, I did not value this plant in a small state until my attention was specially directed to it in that condition. I then took about a dozen healthy shoots, with a heel attached to them, off an old plant, which was neither useful nor ornamental; these I struck in the usual way, and I potted them in June in 5-in. pots, and grew them on near the glass in the stove, stopping them frequently until some time in July or August, when I removed them to the greenhouse, where they soon showed signs of flowering. They blossomed freely, and, from the commencement of the flowering period up to the present time, they have not ceased to form striking objects, and they still look as if they would keep in bloom for some time to come. It is therefore clear that if this plant be grown properly in 5-in. pots, or in any other size required, it will become both useful and ornamental at this season of the year, when it is difficult to keep conservatories well supplied with flowering plants. I am also of opinion that if it be kept in good shape and healthy it will make a valuable table plant, both as regards duration of bloom and also brightness of colour under gas or other artificial light.—T. C.

Raising Small Seeds.—Small seeds, such as those of Lobelia, Begonia, &c., occasionally present, especially to the amateur, considerable difficulty in inducing them to germinate. This arises from the fact that, while it does not do to cover such seeds with soil, a very small amount of surface dryness is sufficient, when the seeds are swelling, to destroy them altogether. Covering the pots with Moss or sheets of glass is occasionally recommended; but both tend to draw up the seedlings, and not unfrequently cause them to damp off. Such being the case, I submit the following plan, with which I have been very successful in raising hybrid Begonias, whose seed is very small indeed. In most plant-houses may be found pots surfaced with a delicate growth of Moss, varying from the condition of a green felt to fully-developed Moss. On this sow the seeds. The Moss maintains a genial moisture, while its fibres retain among them the tiny seeds and prevent them from being washed down into the soil and lost. A piece of turf (peat) kept close and moist under a bell-glass also answers the purpose, but air must be freely and judiciously admitted as soon as the seeds are up. Altogether I am of opinion that the best *nidus* for such seeds as I have named is a Moss-surfaced pot; in proof of this I may say that I have numbers of seedling Begonias amongst the various Mossy pots in my little plant-stove—some showing flower, and others not ten days old.—G. P.

Adiantum cuneatum pentaphyllum.—Under this name I received, some years ago, from the late Mr. Bewley, of Blackrock, Dublin, a very beautiful and useful Adiantum, which, as I have never seen it elsewhere, nor have been able to find it in any trade catalogue to which I have access, may possibly be unknown to some of your readers. It resembles the typical form of A. cuneatum in its creeping rhizome and more or less triangular fronds, which are, however, narrower in proportion to their length than in the type; the growth, too, is more upright, and the leaves are a fresh, bright green in colour, quite different from those of A. cuneatum, and they have no trace of the faint purplish tint to be found in the young fronds of that species. The chief distinction, however, is in the fact that in A. c. pentaphyllum it is only the first or second pairs of pinnæ that are again bipinnate, all the other pinnæ being simply pinnate, with the foot-stalks of the pinnules rising directly from the primary divisions of the rachis; the pinnæ are larger, more deeply lobed, and less oblique than those of the common form. From a cultural point of view, A. c. pentaphyllum is especially valuable, as it lasts, when cut, far better than any other form of Adiantum with which I am acquainted, the older fronds remaining unwithered for twenty-four hours, even without water; while in elegance, both of form and colour, it holds its own with any of the smaller species, such as A. cuneatum, tinctum, tenerum, and Capillus-Veneris.—Greenwood Pim. [Judging from the small specimen sent, this Maidenhair appears to be Adiantum glaucophyllum.]

Kalosanthes coccinea.—There are few more showy, and at the same time more sweetly fragrant plants, than this. To grow and flower it well was at one time considered a creditable feat, though its culture is not a difficult matter. It is one of our oldest and finest greenhouse plants, and sometimes it is planted out during the summer in the flower garden. Cuttings of its succulent shoots struck in autumn, potted off the following spring, and allowed to grow all the summer in any light airy structure, or in a warm exposure out of doors, flower the same year. Like most of its class, it strikes freely, and the young plants may be potted singly in 6 in. pots in a compost of loam and sand chiefly, mixed with a proportion of broken potsherds and charcoal. The shoots are better not pinched; but if tops be chosen for cuttings which are just breaking into a number of shoots, as they often do, pinching will not be necessary. The great point as regards the summer culture of plants of Kalosanthes is to get their growth well ripened, and with this object, in the south at least, and even in the north, it is a good plan to plunge them in a warm border in front of a hothouse, where they will get all the sun and heat possible; in such a situation they do almost better than under glass. Water should be regularly but sparingly supplied, and towards August they should be kept rather dry, to induce the formation of flower buds, when they may be introduced to the conservatory and placed in a good light. The Kalosanthes is from the dry slopes of the Cape of Good Hope, and, as might be expected, the successful flowering of it depends very much on exposure to the sun and air, together with a limited supply of moisture. In order to increase the heat about the roots, I have seen the plants plunged in a bed of sand formed close to the front wall of a plant stove, where between the heat that struck outwards from the pipes inside the house, and the sun together, they were subjected to a temperature that would have been destruction to many other subjects, but which suited them admirably.—J. S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Shading Todeas.—It has been found in the Holloway Nurseries this summer that shading placed from 6 in. to 9 in. above the glass, instead of being allowed to lie closely on it as is generally the case, greatly benefits the growth of Todeas. By this arrangement the sun's ray are effectually broken and a thicker canvas can be used than is usually employed, and yet abundance of light is admitted, conditions under which many other plants would doubtless be found to thrive besides Ferns.—S.

Sempervivum tabulæforme.—I find the present time to be the best for propagating this plant; cut the leaves off with a small portion of the stem adhering to each, have some shallow pans filled with soil, lay the leaves on the surface, pegging them down with small wire pegs; they should be put in a dry warm house, and must not be watered until the young plants are the size of Peas.—Richard Nisbet, *Aswarby Park.*

THE FLOWER GARDEN.

HEDYCHIUM GARDNERIANUM OUT-OF-DOORS.

Not only will this plant flower out-of-doors, but it will live through an ordinary winter without any protection. In order to enable it to do this, however, it should be planted out in May, so as to make its summer growth where it is to stand, as then it drives its roots deep down, and becomes thoroughly established before the tops die off in autumn. The soil that suits it best is a loose, sandy loam made rich by working into it a good dressing of thoroughly decomposed manure, and if this be done, and a mulching of the same applied while the plant is making its growth, with an occasional watering of liquid manure in dry weather, it will form stems at least 5 ft. high, with leaves double the size which they usually are under pot culture. For forming groups in the sub-tropical garden, this Hedychium has few equals, and as a plant for the backs of herbaceous or shrubbery borders it is quite unsurpassed, affording, as it does, one of the most striking objects which it is possible to have in situations of that kind. Where the soil is not naturally favourable, deep holes should be dug, into which some drainage should be thrown; and then they should be either filled up with fresh loam, or the natural earth made rich and light. A heap of cinder ashes, half-rotten leaves, old tan, or anything of that kind, laid over the crowns in winter, will ensure their safety, even during the severest weather; or the roots may be lifted in autumn and wintered in any dry place along with those of Dahlias and Cannas. Those who once grow Hedychiums in this way, will never again be satisfied with them in pots, with their roots restricted and half-starved, as such gross-feeding plants must necessarily be, unless the pots afforded them are of unusually large dimensions. Hedychiums may be readily increased by dividing the roots, an operation which should be done in spring, just as they are starting into growth, as then the severed parts soon heal over, and there is no danger of rotting, which they would be liable to do were the separation effected while they are in a dormant state. In cutting the roots through, it is necessary to see that each piece has a young, plump crown attached to it, or disappointment may be the result.—S. D.

Lilium candidum an Evergreen.—Probably "F. W. B." never intended to convey more than "Dunedin" has so elaborately shown, viz., that this was the only Lily which had green foliage all the winter, and that in fact the clumps of bulbs of this variety were never devoid of green leaves. That the new growth is the product of new bulbs is, in the case of this Lily, well known to me, and the freedom with which these young bulbs are produced sufficiently accounts for the fact that this Lily is the most common of the family to be found in gardens. The golden variegated form of this variety is not as frequently met with as it should be, as in borders in winter its foliage has a cheerful and enlivening appearance. Even on that account alone, it deserves a place in every garden.—A. D.

Wintering Calceolarias.—As the best season for propagating these has now arrived, let me recommend any one who has hitherto experienced any difficulty in keeping his plants healthy through the winter to look well to the quarters in which they are placed. They cannot bear artificial heat, and therefore a cold frame is the best for them; set it on a hard foundation of coal ashes, and spread over them 6 in. of good fresh soil, consisting of sandy loam and a little leaf-mould; beat all down firmly, and insert healthy cuttings from growing shoots 4 in. apart each way. Water freely, and keep the frame close until the cuttings are rooted, after which ventilate freely on all favourable occasions, and water when necessary, as drought is injurious to Calceolarias of this class. Pinch out the points as soon as they commence to grow, and by April they will be fit for planting in beds. The roots being in a solid mass, will move in square blocks by cutting down between each plant, whereas plants in loose soil will not recover the check sustained by transplanting for some time.—J. Groom, *Henham.*

Violets by Post.—I can confirm what Mr. Groom says (see p. 388) about transmitting Violets through the post in small tin boxes. I have done it for years with great success.—A. R.

An Ancient Rose Tree.—On the Grass near a pathway at Connington Castle is a veritable old tree of the Rose named Blairii No. 1. It is budded on the Briar about 3 ft. from the ground. I measured the stem 2 ft. 6 in. from the ground, and found it to be 15 in. in circumference, and the head through the branches was 12 ft. in diameter. It has not been disturbed for many years, and I was told that when in bloom it was a sight worth seeing. It is growing in a strong loam.—E. H.

VELTHEIMIA VIRIDIFOLIA.

The Veltheimias form an interesting group of plants from the Cape of Good Hope, closely allied to the Tritoma; there are only two or three species, and the one here figured is the best. It is an evergreen, and has long, lanceolate, undulated foliage of a glistening deep green colour. From the centre rises a stout scape about 18 in. in height, bearing numerous, tubular, drooping flowers, which are purple streaked with red, and conspicuously green-pointed. It is said by many to be hardy, and may be so in very favoured spots in warm sandy soils, but from my experience I have never found it to succeed out-of-doors. As a pot plant for conservatory decoration it is valuable at this time of the year, the attractive spikes of flowers and the pleasing foliage rendering it an object of interest in the greenhouse. It prefers a good friable loam, and is readily propagated by offsets or by pulling off the leaves close to the bulb, and inserting them in a pot filled with sandy soil, when they will form bulbs at the base. A. P.

Veltheimia viridiflora.

AMERICAN SENNA (CASSIA MARYLANDICA).

This is the showiest of the hardy Cassias, and its distinctive characteristics render it a suitable plant for the herbaceous border. It grows from 3 ft. to 4 ft. in height, and produces abundance of bright yellow flowers in clusters. It is an attractive plant, and has been apparently overlooked, as it is rarely seen in catalogues, and consequently would be very scarce in private gardens. The leaves are sometimes used as a substitute for the common Senna, but the true drug is procured from Cassia orientalis. P.

Cassia marylandica.

TROPÆOLUM TUBEROSUM.

Among ornamental climbing plants for the summer decoration of our gardens few are more popular than the Nasturtiums or species of Tropæolum, and this popularity they fully deserve, for all the species are worthy of extensive cultivation. Many a country cottage and town garden are made bright by the flowers and fresh green foliage of Tropæolum majus, and many a rustic arbour, in itself perhaps a most primitive structure, is made a "thing of beauty" by the luxuriant and free growth of T. peregrinum, commonly known as the Canary Creeper. The Tropæolums, Indian Cress plants, or Nasturtiums, are all natives of South America, the species of which we give a figure having come originally from Peru. The specific name tuberosum was given to it by Ruiz and Pavon, in consequence of its root being in the form of a somewhat Pear-shaped tuber, and these tubers when cooked are a constant article of food amongst the natives. The flavour after boiling is said to resemble that of Seakale, but the pungency of the Tropæolums is still quite apparent; owing to this they have not found favour with Europeans as an esculent, for which they were proposed at one time; indeed, it was thought they might form a substitute for the Potato. The pungency in question, however, might be overcome by cultivation, as has happened in the case of the Potato, the tuber of which in its wild or original state is small and waxy, so much so that in Bolivia they are exposed, after being dug up, to the action of severe frost before they are cooked and eaten. The Bolivians treat the tubers of Tropæolum tuberosum in the same way, and they are said to be greatly improved. The plant was first grown in the Glasgow Botanic Garden so long ago as 1836, since which time it has been widely distributed, and is a great favourite on account of its nearly hardy character, brilliant flowers, and glabrous, dark green foliage, the leaves having each five broad lobes; the calyx is deeply five-lobed, of an orange-red colour, the upper segment prolonged into the usual spur; the corolla is composed of five petals, longer than the calyx, and of a bright red colour. The plant grows well out-of-doors in some localities, but to produce the flowers in greater perfection a slight amount of previous forcing has been recommended. J. R.

Tropæolum tuberosum.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Ricinus Gibsoni.—This beautiful bronze-leaved Castor-oil plant has withstood the severe frosts of last week better than any of the larger-foliaged varieties, and, while most of the other occupants of sub-tropical beds are quite destroyed, this is as fresh as ever. The side branches are highly effective for furnishing large-sized trumpet vases, now very popular in indoor decoration. —J. Groom, *Henham.*

Androsace lanuginosa.—This is, I think, about the best Alpine rock plant with which I am acquainted; I have it in a sheltered spot facing the north-east. It is about 2½ ft. across, and completely covers the rather smooth surface of stone over which it forms a beautiful drapery. It has been in full bloom for over three months, and promises to continue so much longer. One other great point about it is that slugs do not touch it, and this is no small consideration. Will anyone devise a plan for keeping off these troublesome pests?—D. C. M., *The Island, Rochestown, Cork.*

Roses and Clematises Mixed.—I have on a previous occasion drawn attention to the beautiful effect produced by planting Clematises and climbing Roses together, and I cannot help still saying to those about planting for permanent beauty to try this combination, for as seen here they produce a most charming effect. Sedum spectabile for herbaceous borders or for flower beds at this season of the year is equally charming; the old Calceolaria amplexicaulis still retains the reputation of being one of the best and most useful bedding Calceolarias which we have, for when the other plants of a yellow colour have failed this is one mass of beauty.—A. Outram, in "Gardeners' Record."

PLATE XCVII.

THE GENUS CLEMATIS.

(WITH A COLOURED FIGURE OF C. INDIVISA LOBATA.)

There is no class of plants which has been so prolific in varieties, in so short a period, as Clematises; and the wonderful diversity they exhibit in the size and coloration of their flowers, has materially enriched the choice of climbing shrubs, with showy flowers, produced in summer and autumn. Altogether about 100 species are known, and these are dispersed over nearly all temperate and sub-tropical countries of the earth, including the mountainous regions of tropical countries. A few occur in the tropics of America, &c., but they rank among the less showy members of the genus. Although the following enumeration includes several species requiring a high temperature, it may be observed that they scarcely deserve a place in a hothouse, where they are better replaced by more brilliantly coloured flowers; but, both for the cool conservatory and the open air, Clematises are unrivalled among climbing shrubs with showy flowers. The earliest-flowering, hardy species commence unfolding their blossoms from the middle to the end of April, according to the season, and these are succeeded by other species and varieties throughout the summer and autumn, some of them continuing in bloom up to Christmas in mild localities. In colour, they present almost every shade and combination of red and blue, though pure scarlets and crimsons are still wanting. The lilac, pale blue, purple, mauve, claret, violet-purple varieties are connected by every intermediate shade. There are also yellow and many pure white-flowered species and varieties, the flowers varying from less than 1 in. to 8 in. or 9 in. in diameter. It is not only as climbers on trees or for covering walls, trellises, &c., that Clematises are useful. They trail or creep equally as well as they climb, and are also admirably suited for bedding, festooning, and other decorative purposes. With all the wealth of variety in wild species, and the Japanese varieties in our gardens in 1863, Clematises were not extensively planted; but, about that time, Mr. Jackman, of Woking, commenced hybridising, employing C. Viticella and the large-flowered Japanese sorts. Among the earliest acquisitions were the beautiful C. Jackmanii and rubro-violacea, and since then Messrs. Jackman and other raisers have reared an almost endless variety, and anyone who has seen the special exhibitions of this flower at Regent's Park and elsewhere must have been struck with their great beauty. Special descriptive catalogues of varieties are now issued by some firms, so that it is unnecessary to say more on this point than that every year new varieties are sent out, and intending purchasers should contrive, if possible, to see and make their own choice. The only danger is that the raising of varieties will be carried too far, and the public get tired of them as it has of several other fine florists' flowers in turn. At all events these handsome productions of the florist's art are quite able to recommend themselves, and the purpose of this article is more to point out the claims of the species, which are likely to be lost sight of at the present time, though their uses are not the same as those of the florists' varieties. The original large-flowered Japanese kinds are all more or less tender, and in severe winters are often cut to the ground; but many of the hybrids—Jackmanii, for example—will bear without injury the severest frosts we ever get in this country. However, whether cut down by frost or knife, they will throw up again in the spring and flower perhaps even more profusely. They never form very thick stems, are not so suitable for permanently covering large spaces, particularly where the height is considerable, and to obtain their flowers in perfection the plants must be freely pruned. On the other hand, such species as C. Flammula, montana, and Vitalba grow quickly to a great height or length, especially the two last. A few species, such as C. erecta, tubulosa, and integrifolia are herbaceous. Characters for distinguishing the species are found in the shape and size of the flower, in the presence or absence of feathery hairs on the styles in the fruiting state, in the inflorescence, &c. Thus, in C. Viticella and its allies, the styles are not plumose, whilst in the montana and Flammula

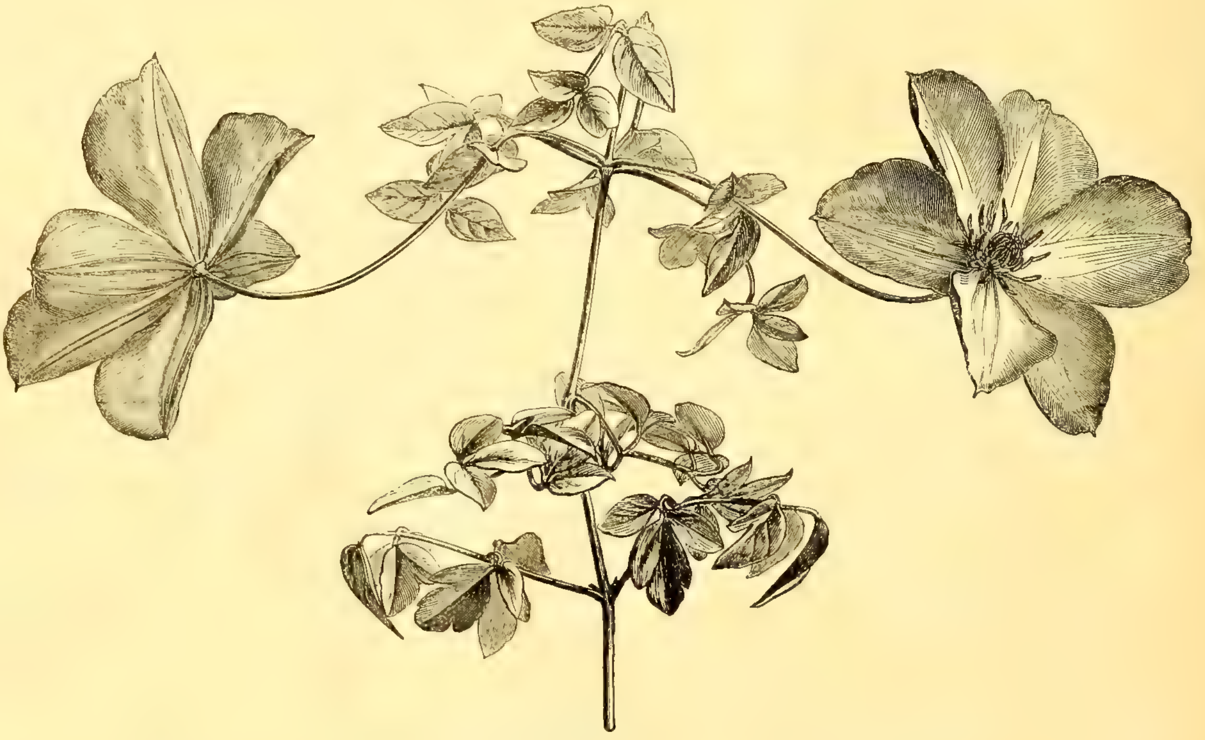
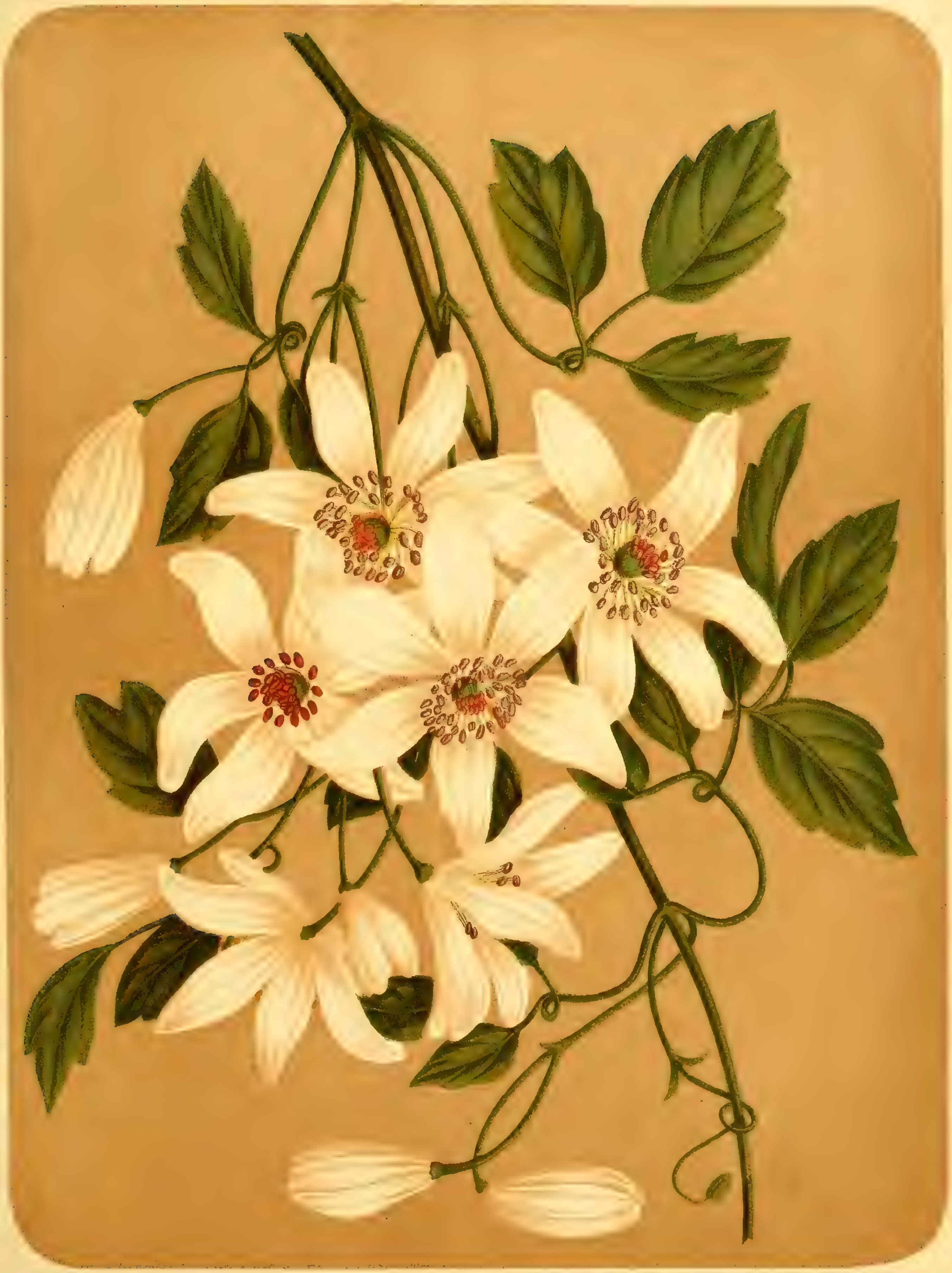


Fig. 1.—Clematis Viticella venosa.



groups they are. The montana group have medium-sized or large flowers, borne separately on long stalks; whilst Flammula and allied species have small flowers borne in large panicles. Several of the North American species have thick, leathery flowers. The New Zealand species and some others have unisexual flowers, and in a few the two sexes are borne on different plants. In popular language the parts of the flower are called petals, but here, in conformity with botanical usage, they are termed sepals. Reasoning from analogy, it is assumed that the sepals of the calyx are coloured, and the petals quite suppressed.

Native Species.

Traveller's Joy (C. Vitalba).—Under cultivation, this species will quickly grow to a height of 25 ft. or 30 ft., and if not quite so ornamental as some of the other small, white-flowered species, it has its uses in covering unsightly brickwork, &c. The feathery carpels persist for a long time, and give the plant a very attractive appearance. From this circumstance, it has got the name of Old Man's Beard; it is also called Lady's Bower and Virgin's Bower. A native of Southern and Central England, and especially abundant on chalky soils.

European Species.

1. Herbaceous Plants.

Entire-leaved Clematis (C. integrifolia, Willdenow, Bot. Mag., t. 65).—An herbaceous, erect species, with large, oval, sessile, quite entire, more or less distinctly three-nerved leaves, 4 in. long in some cultivated specimens. Branches terminating in solitary, nodding, dark blue flowers, supported on long, naked stalks. A very hardy, free-growing and distinct, though not remarkably showy species. It was cultivated by Gerard in 1596. A native of the Pyrenees, Austria, and Hungary.

Erect Clematis (C. erecta).—A dwarf, erect, herbaceous plant, with pinnate leaves, of two, or three, or four distinct pairs, and a terminal leaflet. Flowers small, white, sweet-scented, arranged in terminal, dense panicles. A native of Central and Southern Europe; cultivated by Gerard. There is a pretty, double-flowered variety of this species, fig. 2. It is quite hardy.

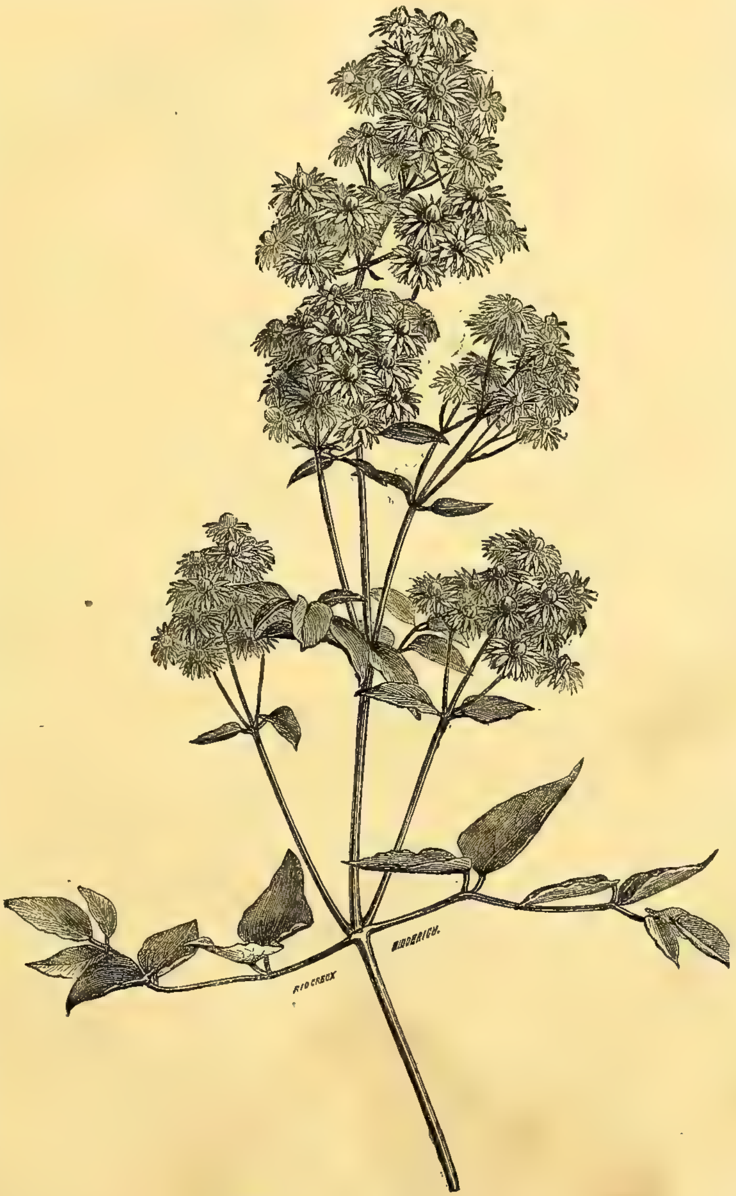


Fig. 2.—Clematis erecta fl.-pl.

Besser's Clematis (C. lathryfolia, Bot. Reg., xxv., t. 61).—One of the prettiest of the herbaceous Clematises, producing a profusion of white flowers in the summer. It grows about 3 ft. or 4 ft. high, and requires some kind of support to prevent it from straggling. A native of the south-west of Europe, and perfectly hardy with us.

Purple Clematis (C. Viticella, Linn., Bot. Mag., t. 565).—The ordinary variety of this has four reddish-purple, veined, obovate sepals, narrowed very much towards the base, and the fragrant flowers are about 2½ in. to 3 in. in diameter; but there are many garden varieties in which the sepals are more numerous, and some of them are quite double, though the single ones are certainly the handsomest. C. Viticella venosa, fig. 1 (see p. 400) has six reddish-purple sepals, which are broader and more prominently veined than in the common variety. There are also some very showy hybrid varieties of this type, all profuse summer and autumn bloomers. This hardy species is a native of the South and West of Europe, and was in cultivation by Hugh Morgan as early as 1569. C. campaniflora does not materially differ, except in the less spreading sepals and its blue flowers. C. Hendersoni, with purple-blue, bell-shaped flowers, is probably a hybrid, and C. Viticella one of its parents.

Evergreen Clematis (C. cirrhosa, Willdenow, Bot. Mag. t. 1070).—This species has an involucre of short bracts almost close under the sepals simulating a true calyx, so that at first sight one might imagine them to belong to a Rosaceous shrub, especially as the upper part of the peduncle between the bracts and the sepals is of the same colour as the latter. A very tall species with simple, entire or toothed leaves, climbing to the top of high trees by means of short stout tendrils. The white bell-shaped flowers are solitary on short stalks in the axils of the leaves, and about 1½ in. in diameter. In a greenhouse it flowers from December to February, but it is quite hardy in the warmer parts of the kingdom, and in the open air it flowers in March and April. In unusually severe winters it is sometimes cut to the ground. A common plant in the Mediterranean regions, varying considerably in the lobing and toothing of the leaves, which are ternately divided in a variety called balearica. It is stated in Aiton's "Hortus Kewensis" that this species was cultivated by Gerard in 1596, but there appears to be some mistake on this point, as he says that he found it in the Isle of Wight, and in a wood near Waltham Abbey. However, it was in cultivation in Phillip Miller's time, who states that it stood out in the open ground in the Chelsea Physic Garden for forty years without injury. The name calycina, has been given to this species in allusion to the calyx-like involucre, and it is perhaps better known by this name than any other. The flowers are useful for cutting, as they hold well.

Frangrant Clematis (C. Flammula).—This small-flowered and small-leaved species is valuable for the delicious fragrance of its white flowers, which are produced in great profusion from July to October. It is deservedly one of the commonest in cultivation, being perfectly hardy, and continuing in bloom until late in the autumn. For many purposes it is preferable to the larger-flowered kinds, as it is not so much injured by rough weather. A widely dispersed plant in the South of Europe and Syria, cultivated by Gerard in this country in 1596. Its small pinnate leaves are very elegant and ornamented independently of the flowers.

Indian Species.

Hardy Shrubby Species.

Spring-flowering Clematis (C. montana).—One of the best hardy species, flowering towards the end of April and beginning of

May, when few other species are in bloom. It is a vigorous, rapid-growing climber, forming quite thick stems in the course of a few years. The leaves are ternately divided, and the white flowers are clustered in the axils of the leaves, each one being borne on a stalk longer then the leaf. The variety in cultivation has white fragrant flowers about 2½ in. in diameter, but there are wild varieties in which the flowers are tinged with pink or yellow, and sometimes as much as 4 in. in diameter. A native of the Himalaya Mountains, ascending to 12,000 ft. above the level of the sea, introduced in 1831. This deserves a place in every collection.

Edgeworth's Clematis (C. barbellata, Bot. Mag., t. 4794).—From the same region and probably equally as hardy as C. montana, and flowering at the same time. The flowers are of a dull purple, the sepals margined with yellow and less spreading than those of C. montana. It was introduced to the Dublin Botanic Garden by Major Madden in 1854. A pretty species to contrast with its congener. The specific name is in allusion to the bearded anthers. It appears to be very rare.

Nepal Clematis (C. nepaulensis).—A slender climber with white flowers, not unlike those of C. montana, from which it is easily distinguished by having two connate bracts on the flower-stalk. In cultivation in this country in 1835, but I have seen it only in a dried state.

Old Yellow Clematis (C. orientalis, Bot. Mag. t. 4495, under the name of C. graveolens).—A pretty yellow-flowered climber, forming stout stems and woody branches. Leaves once or twice pinnate, smooth and glaucous; sepals ovate acuminate. Flowers about 1½ in. in diameter, yellow, or sometimes mottled with purple in wild specimens, borne in large panicles. A widely dispersed and variable species, ranging in temperate regions in Asia from Persia to Manchuria, and ascending to an attitude of 14,000 ft. in the Western Himalaya. A hardy summer flowering and very desirable species. Although introduced as long ago as 1731, it appears to be rare.

Lindley's Clematis. (C. graveolens, Lindley).—A greenhouse species, closely resembling C. orientalis, differing mainly in the sepals being elliptic and obtuse instead of taper-pointed. It is also more slender in habit, and the yellow, strongly-scented flowers are somewhat larger. In foliage it is not unlike C. Flammula. A native of the Himalaya Mountains at an elevation of between 6000 ft. and 11,000 ft., introduced in 1845. It is doubtless hardy in the warmer parts of Britain, at least from the higher habitats, if not the lower.

Stove or Greenhouse Species.

Hore's Clematis (C. hedysarifolia, Bot. Reg., t. 599).—A shrubby species with ternately divided rather thick leaves, climbing by means of its twisted petioles. Flowers small, white, in large terminal and axillary pendulous panicles. A stove plant cultivated by Messrs. Colvill in 1821; native of Pegu and Concan, and first collected by Mr. Hore.

Smilax-leaved Clematis (C. smilacifolia, Bot. Mag. t. 4259). A fine greenhouse climber with large ovate or cordate thick leaves, sometimes as much as 1 ft. in length by 6 in. or 7 in. in breadth. Flowers rather small and curiously coloured, scarcely exceeding 1½ in. in diameter; the sepals thick and finely reflexed, dull brown and hairy outside, purple inside. A native of the sub-tropical regions of Borneo, Java, the Malayan Peninsula, and North India, introduced from Java by Messrs. Veitch in 1846.

Herbaceous Species from North China.

Hyacinth Clematis (C. tubulosa, Bot. Mag., t. 4296).—A handsome hardy herbaceous species, growing to a height of 3 ft. or 4 ft., and flowering late in the autumn, when few other things are in bloom. It has ample, ternately divided glossy leaves, and terminal panicles of small pale blue flowers, bearing a strong resemblance individually to those of a large single Hyacinth. A native of North China, cultivated in this country as long ago as 1846, but still rare in private collections. C. Davidiana, "Revue Horticole" 1867, p. 90, scarcely differs except in its hairiness.

Dusky Clematis (C. fusca, Gartenflora, t. 455).—A singular species in the colour of its pendent tubular flowers, which are densely woolly, and of a rich dark brown suffused with violet. They are about 1 in. in depth, with the sepals slightly reflexed at the tips, and disposed singly on short stalks in the axils of the leaves. Stem erect and herbaceous, or woody and climbing in different varieties inhabiting North-eastern Asia. This species, according to Dr. Regel, is very attactive, and possesses the additional merit of being perfectly hardy even in the rigorous climate of St. Petersburg—that is to say the shrubby varieties. In Kamtschatka it becomes herbaceous.

Narrow-leaved Clematis (C. angustifolia, Will.; Watson's "Dendrologia Britannica," t. 112).—A dwarf, erect, half-shrubby species, with rather stout stems. Leaves pinnate, with three to seven distant, long, narrow leaflets, the upper ones usually undivided. Flowers white, about ¾ in. in diameter. This is a very distinct and very hardy Clematis, native of Siberia and North China. It should be treated as an herbaceous plant.

Cut-leaved Clematis (C. æthusæfolia, Turez).—The typical variety of this Clematis is an herbaceous plant, or, in mild seasons half shrubby, the lower part of the stems becoming woody and persisting through the winter, with very slender stems and finely-dissected leaves, resembling rather those of Adlumia cirrhosa than those of Fool's Parsley, the lobes being often much narrower than in the accompanying figure (fig. 3). Altogether, this is one of the most elegant, if not the most elegant, of the herbaceous Clematises, bearing a profusion of its yellowish-white, bell-shaped flowers, which stand up clear of the foliage during the latter half of the summer and the beginning of autumn. In a good soil it will climb to a height of 6 ft. or 8 ft. in one season, and its light and graceful foliage, and pretty, though not showy, flowers, recommend the plant more than any praise I could bestow upon it. Regel ("Gartenflora" (1861), t. 342) figures and describes a variety under the name of latisecta, in which the divisions of the leaf are broader. It is described as a tall, shrubby, slender climber, having white flowers. Both forms are perfectly hardy; the latter was introduced from the Amur country, by Maack, into Russian gardens, and the herbaceous form is from North China, by whom introduced I have not ascertained.

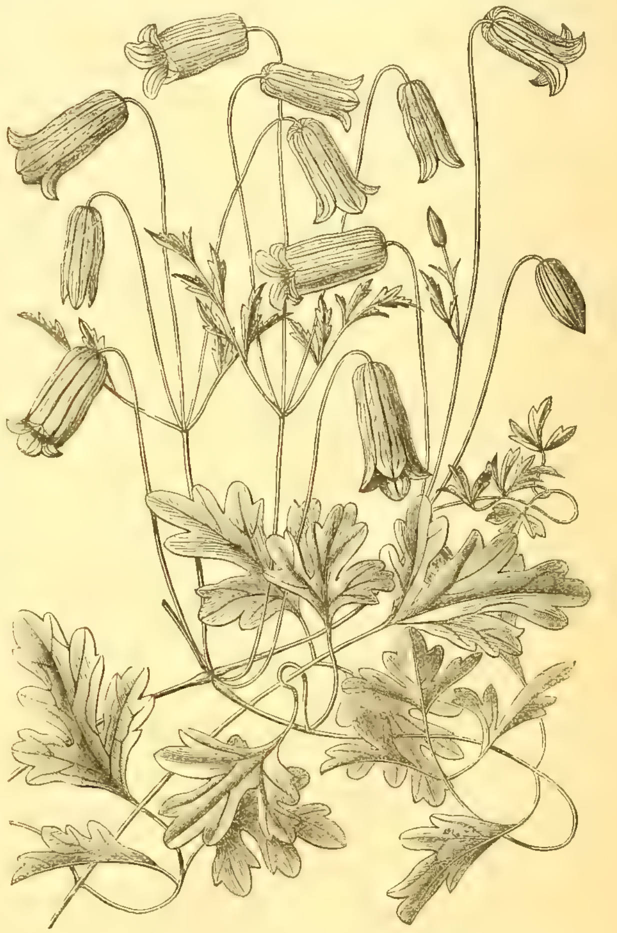


Fig. 3.—Cut-leaved Clematis (C. æthusæfolia).

Japanese Species and Varieties.

Large-flowered Japanese Clematis (C. florida).—This species is regarded by botanists as being the parent of all the gorgeous florists' varieties of the lanuginosa, patens, cœrulea, and other types. Although the extreme forms imported from Japan are very different from each other, there appears to be little doubt that many of them originated in Japanese gardens. How far they may have been intercrossed it is impossible to say; but whether they have actually descended from one wild type or from more than one, is of little importance from our stand-point. They are very distinct and beautiful, and although not quite so hardy as some other species here enumerated, they are practically hardy, especially against a wall; and if they are cut down by frosts they will shoot up again from the root, and flower as well as ever in the succeeding summer. The first variety was introduced just about a century ago, and is the one to which the name florida was originally applied. It has leaves consisting of three or five oval leaflets, and white flowers faintly tinged with blue, and about 3 in. in diameter. A semi-double variety appears to have been first introduced. Later came the C. Sieboldi having white flowers, with a purple violet centre; and several others were considered as varieties of C. florida. In 1836 the cœrulea or azurea type was introduced. This has large, widely expanded flowers 5 in. or 6 in. in diameter, composed of about eight sepals in the single varieties. The flowers are of a pale blue or lilac or white. Among early varieties of this type, "Amalis" and "Sophia" may be mentioned. The former has pale violet flowers, and the latter very large deep lilac-purple flowers, each sepal traversed longitudinally by a greenish band through the centre. Another name for this type is patens. C. lannginosa has usually simple, broad, heart-shaped leaves, and even larger, pale blue flowers. It was introduced in 1851. A variety called pallida has flowers not less than 9 in. or 10 in. across. C. Fortunei is a handsome double variety of more recent introduction. What these Japanese Clematises, intercrossed with others, have given birth to in this country is touched upon in the introductory part. C. cœrulea odorata, fig. 4, has handsome reddish-violet fragrant flowers. None of these varieties form very stout woody stems.

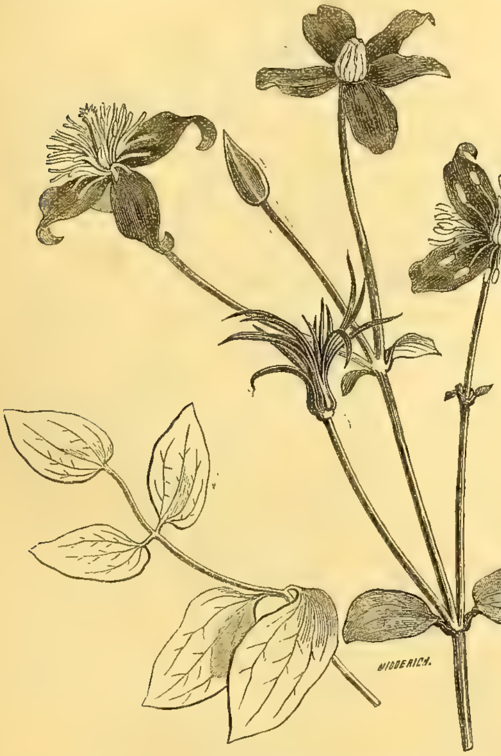


Fig: 4.—Clematis cœrulea odorata.

New Zealand Species.

Forster's Clematis (C. indivisa).—A splendid greenhouse woody climber, quickly covering a large space, and blooming most abundantly in the winter and early spring. It is a native of New Zealand, and is common throughout the islands, festooning lofty trees, especially on the outskirts of forests, having stems 6 in. thick. The trifoliate leaves are leathery in texture, and either glabrous or slightly downy, and the white, fragrant flowers vary in wild specimens from 1 in. to 4 in. in diameter. The leaflets are usually undivided, hence the specific name; but there is a variety with lobed leaflets, a coloured figure of which accompanies this. It bears the name of lobata, and different plants vary considerably in the extent of the lobing, the present one being no more than coarsely toothed. Introduced about forty years ago, and deserving of all praise, being unsurpassed for embellishing a large greenhouse or conservatory in early spring.

Colenso's Clematis (C. Colensoi, Hooker; syn.—C. hexasepala, Lindley, "Botanical Register," xxxii., t. 44, not the true C. hexasepala).—A native of New Zealand, having ternately divided leaves, and small, greenish, but very sweet-scented, flowers. It is of slender habit, and the leaves are often very much divided into very small leaflets. Unlike the other New Zealand species, this has hermaphrodite flowers.

South African Species.

Masson's Clematis (C. brachiata, Bot. Reg., t. 97).—An evergreen, shrubby species, with dark green, ternately or quinately-divided, glossy leaves, and medium-sized white flowers with yellow stamens. Flowers in axillary, bracteate clusters of three or five. A greenhouse plant, climbing to a considerable height and flowering freely. It appears to have been first cultivated in this country by a Mr. Middlemist, nurseryman, at Shepherd's Bush, early in the present century. I do not remember having seen it in a living state.

American Species.

1. Hardy Shrubby and Herbaceous Species.

Long-flowered Clematis (C. cylindrica).—This is one of the most showy of the North American species, having bell-shaped flowers nearly 2 in. in depth, the sepals cf a dark indigo-blue on the outside, light blue inside and on the margin. The flowers are thinner in substance than those of either Viorna or reticulata. It was in cultivation in the beginning of the present century, and is figured in the "Botanical Magazine," t. 1160. Native of Virginia and southwards, shrubby in its warmer habitats, but the stems are annual with us. A variety called Walteri has very narrow leaflets.

Leather Flower (C. Viorna).—Herbaceous or slightly woody at the base, with pinnate leaves, and thick, leathery, purplish, pendent flowers. A pretty species treated as an herbaceous plant, when it will grow to the height of 4 ft. to 6 ft. The yellowish, plumose styles of the fruit are very conspicuous. Leaves pinnate, or the uppermost ones simple. Flowers solitary, terminating the branches, and axillary. Andrews figured a Clematis, to which he gives this name, with flowers of a dark, almost indigo-blue, but this is probably C. cylindrica. The species was cultivated in this country in 1830. It is a native of North America, growing in rich soil from Pennsylvania and Ohio southwards.

Netted Clematis (C. reticulata).—A greenhouse species closely allied to C. Viorna, but the leaves are prominently net-veined, and the purplish-flowers are somewhat larger and thinner in texture. Watson, in his "Dendrologica Britannica," vol. 1, t. 72, represents the fully expanded flowers as 3 in. across. A native of the southern States of North America, cultivated by Messrs. Colvill, of King's Road, Chelsea, in 1822. It possesses no special decorative merit.

Pitcher's Clematis (C. Pitcheri).—Near Viorna and cylindrica, but the styles of the fruit are not feathery. It has dull, purplish flowers, on long naked stalks. A native of Illinois, in the Mississippi. There is a very beautiful Clematis in cultivation under this name with handsome orange-red flowers.

Virginian Clematis (C. virginiana).—A slender climbing shrub, with ternate leaves, and coarsely toothed leaflets. Flowers small, less than ½ in. in diameter, greenish white, arranged in axillary panicles. A very hardy species, ranging from Canada southwards. In cultivation in this country in 1761.

Creamy Clematis (C. ochroleuca).—A dwarf herbaceous species, with entire sessile leaves, and solitary terminal yellowish-white flowers. A rare North American plant cultivated by Messrs. Loddiges some years ago, and figured in their "Botanical Cabinet," t. 661. It is a plant of little beauty.

2. Stove or Greenhouse Species.

Houston's Clematis (C. dioica, Linn; syn, C. americana, Will.).—A very variable and widely-dispersed tropical American species, of tall, climbing habit. Leaves ternately divided, leaflets entire; flowers small, white, in large panicles. It was introduced by Houston before 1733, but it is not a particularly ornamental plant in comparison with many of the greenhouse species.

W. B. Hemsley.

Amarantus is a Himalayan crop, but it gives a poor and indifferent food. It forms an ornamental feature, both yellow and red varieties, when in flower on the terraced hillsides up to about 8,000 ft. or more.

THE LIBRARY.

ELEMENTS OF AGRICULTURAL CHEMISTRY AND GEOLOGY.*

Although this well-known work was specially written as a scientific guide to the agriculturist, it will prove none the less valuable to the practical gardener who wishes to make intelligent progress in the art of horticulture by studying the principles upon which it depends. To be successful, the horticulturist, just as much as the farmer, ought to become acquainted with the connection which exists between the art which he practises daily and the sciences of chemistry, geology, and physiology. The scientific principles involved in the growth of a bed of prize Roses are precisely similar to those which govern the cultivation of a 10-acre field of Wheat or Turnips.

The revision of the present edition of this important work has been entrusted to Dr. C. A. Cameron, the Professor of Chemistry to the Royal Agricultural Society of Ireland, who has been long and favourably known as a laborious and successful writer in this particular branch of science. The old arrangement of subjects has, for the most part, been strictly adhered to. We are first of all told in that lucid style, of which the late Dr. Johnston was such a thorough master, what are the objects of applying the sciences treated of to the improvement of husbandry in general. We are next instructed in the general principles of chemistry, after which the elementary constituents of plants, both vegetable and mineral, are fully described, and their sources traced to the fountain-head. A chapter on the physiology of plants, and another on their proximate constituents, such as gum, fat, sugar, gelatine, &c., bring this, the purely theoretical portion of the book, to a close. We now enter on the more practical division of the subject, with an account of the composition and properties of soils, and of the methods usually adopted for their improvement. These methods are discussed at full length, the reasons being given why different means are employed under the ever-varying vicissitudes of soils, climates, seasons, and the crops to be grown. This part of the book ought to be carefully studied by the horticulturist, who is more at the mercy of these changes even than the farmer. The chapters on manures and manuring will also repay attentive perusal, the "why and the wherefore" of the matter being discussed with great clearness. The article on the storage and application of manure is a peculiarly valuable one, and will be read with great profit by every cultivator who has access to a cow-shed, a stable-yard, a piggery, or even a fowl-house. After this follow half-a-dozen chapters on crops, cattle food, and dairy produce, which are but of slight interest to the horticulturist. The book concludes with a chapter on food and dietaries, which will be read with advantage by everybody.

The work is well and clearly printed, but we regret to see a few misprints amongst the chemical formulæ, which, although perfectly obvious to the practised chemist, will, it is to be feared, sorely puzzle the tyro who, as a rule, has an unreasoning dread of chemical symbols. About fifty additional pages have been added to this edition, and the index has been greatly enlarged, as well as divided into two parts—one referring to the authors mentioned, the other to the subjects treated of. We are glad to see that Dr. Cameron has adopted the latest method of nomenclature for chemical substances throughout, a glossary being added for the sake of those who find the new names strange to them. We cordially recommend this book to all those of our readers who wish to carry out horticultural operations on a truly philosophical basis.

An excellent instance of the nature of scientific knowledge properly applied is cited by Dr. Von Klenze in the "Country Gentleman's Magazine" of the present month. In the year 1869, in Upper Bavaria, some 1400 acres of swampy Grass land and lake were laid dry by proper draining at a cost of £74,000, and taken into cultivation. The owners of the reclaimed land expected it to prove as fertile as the water-washed banks of the Nile. It was accordingly tilled and sown, but not a single ear of Wheat or Barley reached maturity, and the scheme fell through. After yielding nothing but coarse Grass for five years, Dr. Von Klenze was induced to analyse the soil. He did so, and speedily discovered that the cause of its sterility was the absence of phosphorus and potash salts. The proper manures were applied to the land in 1874, and in the following year the crops were as heavy as any in the district, some of the produce carrying off the first prize at the Munich Agricultural Exhibition. Had the owners of the land laid out a few *zwanzigers* on the purchase of the German translation of the book we have been reviewing, and studied it attentively, they would not have lost the interest of their capital and the value of the produce of their land during the six years that both were lying fallow.

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* "Elements of Agricultural Chemistry and Geology." By the late Professor Johnston, of Durham, and Charles A. Cameron, Professor to the Royal Agricultural Society of Ireland, &c. Tenth Edition. W. Blackwood & Sons. 1877.

TREES AND SHRUBS.

RETINOSPORA JUNIPEROIDES.

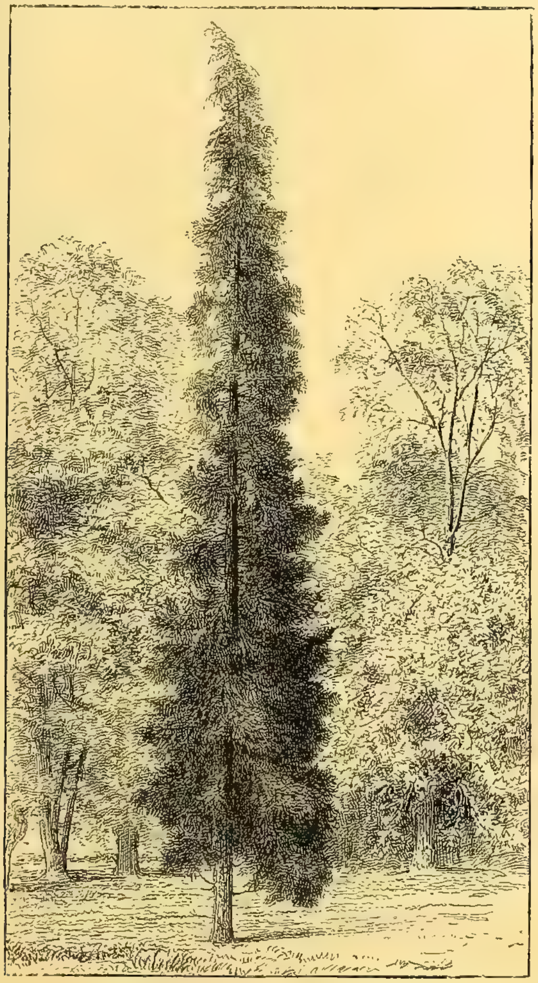
This Cypress, according to Carrière, is a native of Japan. It forms a round-headed, Heath-like shrub, from 3 ft. to 5 ft. high, and has numerous erect, much-divided branches, covered at and towards their extremities with rather stiff, narrow, sharp-pointed leaves, from $\frac{1}{4}$ in. to $\frac{3}{8}$ in. long. They are arranged in opposite cross pairs (decussate—hence the name R. decussata, by which it is best known), and are of a bluish-green colour in summer, changing in autumn (in Britain, at least) to a violet-purple. This colour at once distinguishes it from its congeners. We have blue-green, reddish-brown, and dingy-brown Conifers, but none of them at all approaching violet-purple. Its size, habit, and colour will at once suggest a befitting place for it in the ornamental garden. But it is as a winter bedding plant that I would more particularly recommend it, for which purpose its striking colour and neat dwarf habit highly fit it. It grows well in any moderately good soil, but it must be rather moist, as in dry or sandy soil it is subject to the attacks of red spider. Geo. Syme.

Retinospora juniperoides.

THE HUON PINE (DACRYDIUM FRANKLINI) AT LONGLEAT.

This elegant Conifer, which is a native of Van Dieman's Land, was named in honour of Sir John Franklin, who discovered it growing in abundance on the banks of the Huon River, where it is said to form a lofty tree, many attaining a height of 100 ft., with a proportionately large girth of stem; its timber is considered valuable in that colony, and is much used by the natives in the construction of ships and boats. The annexed woodcut, prepared from a photograph, is a true representation of a specimen of it in the pleasure grounds at

Longleat, and is probably the largest example of it to be found in the open ground in Britain. It measures 30 ft. high. In habit it is pendent and graceful, and singularly distinct from all other Conifers; its flexible branches, too, are clothed with pretty, whip-cord-like spray of a lively green colour. A more fitting and becoming memorial evergreen tree with which to adorn a cemetery could not easily be found; it would also be a suitable tree to plant in a rock or wild garden, or to place on a sloping bank to add picturesque contrast among trees and shrubs of wide-spreading and of less graceful forms. It is not, I think, generally known that this Pine is quite hardy in England, for I have often seen it in nurseries pent up and half starved in pots, and kept under glass during winter, instead of being treated as a hardy plant, and allowed to remain in the open ground, and so get hardened in its earlier stages of growth, to enable it to withstand severe winters when planted out permanently. Some few years ago I bought a plant of this Conifer; it was in a pot, and had evidently been kept under glass previously; I, however, turned it out of the pot, and planted it in the nursery here; the first winter it got slightly injured by frost, but since then it has not suffered in the slightest degree through severe weather, and it may now be seen in the form of a healthy, well-grown tree.



The Huon Pine (Dacrydium Franklini).

George Berry.

A Gravel-walk Metal-scraper Mat.—This is an iron grating-like mat for placing at entrances, the bottoms of steps, &c., approached by gravel walks, and convenient for removing gravel, snow, or sand from the feet. It is made by Messrs. Tidcombe & Son, of Watford, of the width of an ordinary step; and, being placed directly in the path, is convenient for use. Mats of this kind will probably be found very useful at hothouse doors.

THE TREES IN KENSINGTON GARDENS.

The decayed condition of these ancient trees when contrasted with those of Hyde Park, shows at once an utter neglect of public taste and feeling, as regards the invaluable freedom of access of so extensive a scope of park and gardens, conjoined in an open expanse, and exceeding 800 acres. The sunken boundary of the ha-ha is unobtrusive and hardly preceptible; but the order and trim condition of Hyde Park, with its well kept borders, its accurately cut edgings, and its noble trees at once demonstrates a careful superintendence; whilst the other, from the decaying palace to the park boundary, discloses only utter somnolence, waste, and neglect. Originally there were three glades running from the round pond in a western, north-western, and south-western direction; these, as laid out by Repton, still exist, and present beautiful, healthful, and effective openings from the old palace, which was founded on the western wall; but in the intervals, and upon all the open spaces of the whole area, stand trees of nearly 200 years' growth, as at first planted; now of great altitude, many of them bare poles, many dead at the top, and nearly all in deadly conflict for freedom of "branchage." When we examine the position and space left for each tree, we find 8 ft. and 10 ft. to be the ordinary interval; but in many instances these giant-trees stand at intervals of only 5ft., 4 ft.,or even 3 ft. apart! In very many cases the tops are dead, but in most the stems grow up in nearly bare poles. How can it be otherwise when there is no space for lateral expansion? The branches interlace and conflict for freedom, which is, in fact, unattainable in a space so constricted. It is now certainly too late to redress the evil of too close planting, but still, by cutting away damaged and deformed trees, room might be secured for lateral expansion of the survivors, and thus the aspect of a forest of masts would be less replusive, whilst the woodland would be more agreeable for light and shade, and in a few seasons more naturally branched. Of the standing timber, a full fourth part might be cut down, which would amply repay expenses of improvements, and at the same time much benefit ramblers who, when frequenting the woods, are much incommoded by the splashy nature of the subsoil. Is there no authority to inspect and rectify the defaults and growing decay of timber trees in Kensington Gardens? In Hyde Park there is a ranger, with a mansion and twenty acres inclosed; and that in the most valued centre; but there are also here various offices, repositories, stores, and cottages, together with a guardhouse, with an accumulated population, annually on the increase. Such is the freedom of open park and public liberties! As this is the season for clearing off and cutting down timber trees, this notice of waste and decay is given before the trees shed their last October leaves, and in order that remedial measures may at once be taken.

"T. H. H.," in "Builder."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Deciduous Cypress (Taxodium distichum).—There is now standing in the grounds at Connington Castle the finest tree of this kind I ever remember to have seen. It is 70 ft. high, and very symmetrical, and 5 ft. from the ground the trunk measures 7 ft. in circumference. It is growing in a strong loam resting on clay not far from a pond.—E. Hobday.

The Parasol Acacia (Robinia Pseud-acacia umbraculifera).—This, one of the most distinct of Acacias, is generally grafted standard-high, but, when on its own roots, it forms a moderate-sized bush, with a wide-spreading, roundish head, full of spray and entirely destitute of prickles. It has never yet flowered in England, as far as I know, although cultivated in this country for more than fifty years. It is the same as the Robinia inermis, and in some of the nurseries it is known as the Mop-headed Acacia.—G.

Mountain Bamboos.—Arundinaria falcata is only found in the Himalayas below 6,000 ft. or thereabouts, the higher Bamboo growing up to 10,0 0 is not A. falcata (as long supposed), but Thamnocalamus spathiflorus, the latter being distinguised by its sheaths (which abruptly narrow into a subulate apex) and also by the beautiful transverse venation of the leaves, easily seen on holding one up to the light. There are various species of small Bamboo in Nepaul and Eastern Himalaya, whether these two species extend so far east we are not aware.

Curious Seed-bed for Bamboos.—The finest group of Bamboos perhaps in the three kingdoms has been growing until last year at Fota; but they are now dead—seeded themselves to death, in fact. Interpersed through them on the island on which they were growing were some other plants, among them being two Tree Ferns (Dicksonia antarctica). On the stems of these a quantity of the Bamboo seed lodged, and from this young plants have sprung up and are growing freely. It is certainly somewhat of a curiosity to find the Bamboo in the character of a parasite, and it would be a point of still greater interest if the plants were let alone to learn what the final result would be. Perhaps it may not be out of place to mention here that a large stock of young Bamboos has been raised at Fota (whether from home-saved seed or not I am unable to say) to take the place of those which have died. It is intended to place them between the old plants, and as soon as they have begun to grow freely the old stools will be removed.—"Gardeners' Record."

THE HUNTINGDON NURSERIES.

These, as might be expected, contain good collections of the choicer kinds of hardy plants, together with many beds of useful hardy bulbs, some of which, at the time of my visit, were full of bright flowers. The Colchicums, for instance, in the shape of some six or seven different varieties, double and single, were in great beauty, as were also several beds of Sternbergia lutea. There is a freshness and beauty about these autumn bulbs that ought to recommend them to all who love flowers. I also noticed several groups, among the Rhododendron beds, of Lilium auratum, each furnished with several fine spikes of handsome blooms. The following showy hardy plants were in flower, viz., Rudbeckia Newmanni; Asters—Amellus, dumosus, ericoides, and Novæ Anglæ ruber. Erigeron bellidifolius, a dwarf Aster-like plant, was likewise very pretty, as was also the dwarf yellow masses of Chrysocoma Linosyris, or Golden Locks, as it is commonly called. Centaurea acanthifolia, a hardy plant with white foliage, will, in certain phases of ornamental gardening, be useful; Plumbago Larpentæ was still pushing up trusses of bright blue flowers, and Solidago villosa and mexicana had just expanded their yellow inflorescence: Statice latifolia is a useful autumn plant; and, among the Tradescantias, congesta and subaspera, although past their best, were still pretty. Malva moschata alba was still in flower, as was also Oxalis floribunda alba. A bed of Tritoma Uvaria glaucescens was particularly striking and handsome; this, in my opinion, is the most useful of the genus. A bed of Marvel of Peru had stood out all winter, and was in full flower, but it occupied a sheltered corner. I noticed a good stock of Yuccas, especially of that best hardy kind, Y. recurvifolia; Delphinium formosum, Belladonna, magnificum, nudicaule, &c., are grown here in considerable numbers, but their beauty was over. Potentillas are a class of plants that deserve more attention than they usually receive, especially the double varieties, many of the flowers being very large and showy; P. Escarbonelle, Aurora plena, Etna, Dr. Andre, aurea, marginata, and flammea are all good.

In the Dahlia quarter, from which many first prize collections at local shows have been cut this year, the following were the very best, viz., Mrs. Stancombe, yellow-tipped fawn; John Neville Keynes, chrome yellow; Flag of Truce, white tipped lilac; Sarah Mc.Mullen, mauve pink; Vice-President, bright orange; Ovid, puce; Cremorne, yellow, tipped red; James Cocher, purple; Miss Henshaw, white; John Standish, scarlet; Queen's Messenger, purple; James Service, dark crimson; Leah, yellow, tipped rose; Rev. Dr. Moffet, dark mulberry; George Goodall, scarlet, shaded orange; John Bennett, yellow, tipped crimson; John Laing, scarlet; Maggie Fairbairn, pale lilac; Royal Queen, white, tipped peach; and Eccentric—this last is rightly named, for often several flowers of different colours may be cut from one plant.

Although the proprietors of this nursery, Messrs. Wood and Ingram, grow almost everything that is likely to be in demand, yet they have their specialities, and amongst these may be named Carnations, Picotees, and Pinks, of which the following are the names of the best, viz., Scarlet Bizarre Carnations—Achilles, Dreadnought, Gorgeous, Duke of Grafton, Garibaldi, Howard, Lord Derby, and Prince of Wales. Crimson Bizarre—Alderman, Chairman, Eccentric Chap, Sybil, Isaac Wilkinson, Wm. Henfield, Esq., and Lord Hinchinbrook. Purple Flakes—Squire Frew, Mayor of Nottingham, Miss Mills, Ada, and Lord Sandwich. Rose Flakes—James Merryweather, Lady Florence, Miss West, Lady Jane Repton, Lady Mandeville, Mr. Woodrouffe, Mrs. Hurst, Pallida, Rosabel, and Rose of Stapleford. Scarlet Flakes—Adrian, Douglas, Superb, Guy Mannering, James Cheetham, and Splendour. Picotees, Red-edged—Ada Mary, B. J. Bryant, Delicata, Duchess of Bedford, Forester, Lizzie, Minnie, Mrs. Brown, Mrs. Ormsby, and Wm. Summers. Purple-edged—Edmund Papworth, Lady Elcho, Lady Sandwich, Mary, Mrs. Little, Robin Hood, and Mrs. Summers. Rose and scarlet-edged—Beauty of Plumstead, Dolly Varden, Edith Dombrain, Mrs. Fordham, Rev. H. Mathews, and Prince of Orange (yellow ground). Pinks—Arabella, Bertram, Charles Turner, Device, Emily, Excelsior, Fanny John Balls, Marion, Minnie, Minor, and Victory.

There are also here collections of the best double Pyrethrums, Pentstemons, and Phloxes; likewise large beds of Scillas, consisting of six or seven kinds, which give quite a character to the place in spring. Cyclamen europæum and its white variety were, at the time of my visit, full of flowers and very showy, and among beds of specimen shrubs I noted several bushes of Magnolia grandiflora (Exmouth variety) unfolding its large, pure white, sweet-scented flowers, whilst close by was a long border of Daphne Cneorum, with many of the plants precociously in flower.

Of the glass houses and their contents, I do not intend to speak in detail. Amongst other things for which this firm has obtained a reputation may be named herbaceous Calceolarias and Cockscombs, both of which are grown largely for seed purposes. Heaths of all the usual winter and spring blooming kinds are well grown, as are also Epacrises, Azaleas, Camellias, and other hard-wooded plants. I also noticed a good batch of Euphorbia jacquiniæflora much better furnished with branches than usual; that useful plant Abutilon Boule de Neige was also plentiful, and Poinsettias (both double and single) were likewise abundant. Amongst Ferns were thousands of seedlings of the Bird's-nest Fern, which will, of course, be distributed amongst the trade. Of Zonal Pelargoniums, I selected the following as being both good and distinct, and useful for pot culture, viz., Lord Zetland, pink, white blotch in upper petals; E. Davis, purplish-crimson; Corsair, orange-scarlet; Mr. Jacoby, salmon-rose; Lady Bosworth, pink; Mrs. Lancaster, pink; Laura Stratton, salmon; Dr. Koch, scarlet; Wonderful, scarlet; Double Vesuvius, a good winter-bloomer; Jessica, dark crimson; Jealousy, yellowish-salmon; Huntingdonia, white; David Thompson, dark crimson, white eye; Eline Sisley, double white, and one of the best, but like all the others the flowers die off pink. Amongst novelties I noticed a good specimen of Harrison's hybrid Musk beautifully in flower; this is destined to become a favourite with growers for market, and, indeed, with everybody who has a window or a square yard of border. In this nursery many thousands of bedding and decorative plants are raised and sent out annually. All the best kinds of Show, Fancy, and French Pelargoniums are largely grown here, as are also Fuchsias, and the still popular Tricolor Pelargoniums are grown by the thousand; even such good old Pelargoniums as Rollisson's Unique, an admirable kind for furnishing cut bloom, may likewise be found here, and many scented-leaved kinds, which everybody should grow for mixing with cut flowers and for making button-hole bouquets. In order to give some idea of the extent of the trade done here in bedding plants, I may mention that last year this firm sold 15,000 of Centaurea candidissima alone, all seedling plants, the produce of seeds sown in August or September.

As soon as the bedding plants are cleared out, the houses which they occupied are planted with Cucumbers for seed purposes, and I noticed, amongst other kinds, a good crop of Rollisson's Telegraph. When true this is a long, handsome fruit; I have grown it 28 in. in length, although from 20 in. to 24 in. may be taken as the average length. Like many other good things, it is sometimes difficult to obtain seeds of it, and other sorts are frequently substituted for it, causing much disappointment. I have often induced the formation of perfect seeds by tying a ligature round the fruit 4 in. or 5 in. from the end; this generally causes the end to swell up into a club-shaped protuberance, from which seed may be obtained, when fruits grown on in the usual way are seedless.

In what are called the Brampton Nurseries belonging to this firm, many thousands of Roses are grown, a large proportion being standards. The soil is a rather stiffish loam, as far as I could see, adhesive and sticky in winter, but porous and inclined to suffer from drought in dry summers, like most of the loams overlying the oolite clays. On such a soil Roses do not make so rapid a growth as on some of the best Rose soils in Hertfordshire, Sussex, and Herefordshire, but the wood is built up firm and compact, and such plants are always well furnished, and move better than where the growth is over-luxuriant. At the time of my visit (October 1), the following were still in good condition, viz., Maurice Bernardin, Elizabeth Vigneron, Madame Boll, Madame Charles Crapalet, La France, Baroness Rothschild, Camille Bernardin, Marie Baumann, Paul Neron, Jules Margottin, Countess of Oxford, Abel Grande, Captain Christy, Marie Finger, Hyppolyte Jamain, Princess Louise, Baron de Bonstetton, Madame Lefebvre, Bernard, and climbing Victor Verdier. Many Teas and Noisettes were also in bloom, and last, but not least, I must mention a plantation of the old pink and crimson Chinas, as bright and as full of flowers as a bed of Pelargoniums in August.

In answer to my questions as to what kinds of fruit trees were most in demand in this and the neighbouring counties, Mr. Sims, who has been manager for Messrs. Wood & Ingram for many years, has furnished the following lists:—Apples—Histon Favourite (a local variety), Wellington, Lord Suffield, King of the Pippins, Blenheim Orange, Juneting White and Red, Celine, Keswick Codling, Royal Pearmain, Quarrenden, Everlasting Pippin, Warner's King, Stamford Pippin, Bess Pool, Scarlet Pearmain, Ribston Pippin, Sturmer Pippin, and Huntingdon Codlin (a local variety). Pears—Autumn Bergamot, Gansel's Bergamot, Glou Morceau, Beurré Bosc, B. de Amanlis, B. de Aremberg, B. de Capiaumont, B. Diel, B. Rance, B. Superfine, Citron des Carmes, Duchesse d'Angoulême, Crassane, Jargonelle, Josephine de Malines, Louise Bonne de Jersey, Marie Louise, Ne plus Muris, Seckel, Winter Nelis-Hasel, Williams' Bon Chrétien, Stilton Swan's Egg (a local variety), Van Mons Léon Leclerc, Passe Colmar, and Vicar of Winkfield. Plums—Victoria, Diamond, Orleans, Early Prolific, Cox's Emperor, Goliath, Pond's Seedling, Prince of Wales, Green Gage, Transparent Gage, Kirke's, Coe's Golden Drop, Jefferson, Washington, and Reine Claude de Bavay. Sixty or seventy acres are devoted to the culture of fruit trees, and they are in all stages, from what are termed maidens to those several years trained; various kinds of stocks have also been tried, and are still in use, for Apples, Pears, and Cherries.

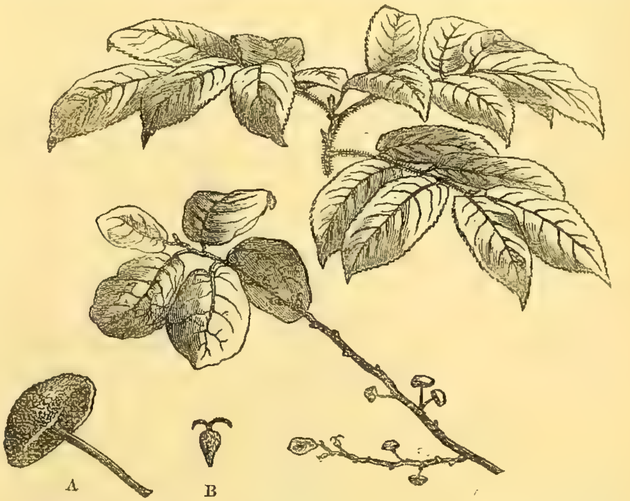
Conifers of all the best kinds are plentiful, and amongst evergreen and deciduous shrubs I noticed the Golden Catalpa and the Golden Elder, both wonderfully bright and handsome; also Euonymus latifolius, clothed with scarlet berries, and the Carolina Allspice, producing freely its bronze, singular-looking, scented flowers. Here I likewise noticed a useful kind of evergreen Honeysuckle (Lonicera grata), which everybody ought to grow; it is very robust in habit, and nearly always in flower; when I saw it on October 1 it was quite gay. Amongst Hollies, both green and variegated, I noticed good examples of Watereriana, Golden Queen, Handsworthi, alba marginata, aurea marginata, Weeping Milkmaid, and Silver Queen, the latter especially well covered with berries. Among park trees, the Carolina Poplar (Populus quadrangularis) is a handsome, free-growing tree, with large, noble-looking foliage; Populus nivea argentea is another handsome Poplar that is now being sought after, and it is one that is calculated to give a distinct feature to park scenery. Populus canadensis nova is also good, and the Eagle's Claw Maple has a novel appearance, with its claw-like foliage. How beautiful at this season are the scarlet American Oaks! Truly we are a conservative people, or else we should use more freely the good things in the way of trees which our enterprising nurserymen bring home to our very doors. Tulip trees again, though very handsome, are not planted in very great quantities, and yet they grow as freely as the Oak. Then again among the Planes, the Western, or Occidental, is an especially handsome tree, and one that is now in brisk demand, although, for some purposes, the Eastern or Oriental is preferable to it.

E. H.

The Mediterranean Flora.—From personal observations in Italy and Greece, with the aid of literature bearing on the subject, M. Fuchs comes to the conclusion that the so-called Mediterranean flora, so far as represented by evergreen woody plants, and plants of the Sage, Thyme, Lavender, and Rosemary Order therewith always associated, occurs, at least in France, Italy, Greece, Southern Russia, and Northern Asia Minor, exclusively on calcareous formation, while soils with little or no lime (granite, gneiss, flysch, sandy and muddy alluvia of rivers) in the whole of that region, and south to Sicily and Morea, bear exclusively deciduous foliaceous trees, and in general, a vegetation hardly differing from the ordinary central European flora. We are not, however (M. Fuchs says), to conceive the phenomenon as if the former class of plants required the lime as nutriment; the correct view rather is, that the southern evergreen flora is better able to press northwards on the drier and warmer calcareous formation, than on the damper and colder clayey soil; and he finds support of this view in the fact that, in the Azores, Madeira, and the Canary Islands, with a truly sub-tropical climate, an evergreen shrub vegetetion, closely agreeing with the Mediterranean flora flourishes on various kinds of soil.

THE UPAS TREE.

Few plants are more popularly known than the Upas tree (Antiaris toxicaria), and there are few that have had more exaggerated stories written about them. Everybody has read or heard of the extreme virulence of this tree, how that in the valleys of Java no living creature, whether human or belonging to the brute creation, could resist its evil effects, even for the shortest space of time; that birds in their flight, unconsciously approaching within a certain distance of the trees, instantly fell dead; that criminals sentenced to death were certain to meet their fate if they were compelled to go within three or four leagues of a Upas tree, and that within this radius the ground was strewed with dead bodies and blanched skeletons.



Antiaris toxicaris.—A. male flower-head; B. female flower, showing two-parted style.

All these fabulous tales emanated from a Dutch surgeon, who had travelled in Java, and afterwards recorded all he had heard from the natives regarding the Antiaris. These stories became diligently circulated by every writer who took up the subject, and the supposed virulence of the Upas tree even formed the foundation for a lengthened series of lines in Darwin's "Botanic Garden." The greater facilities of exploration, however, and the spread of civilisation, which since that time has developed itself, have proved all these startling accounts to be, to a large extent, fabrications, the fact being that the Upas tree inhabits the hot, damp, and low valleys of Java, where carbonic acid gas is generated in great abundance, besides which sulphuric vapours are emitted from the craters of volcanoes connected with the valleys, so that the Upas tree was at one time credited with these poisonous effects. Notwithstanding all this, however, the tree contains a very virulent poison. From incisions made in the bark a white or yellowish juice exudes in great abundance, and soon becomes concrete in a black, resinous mass; this resin, mixed with other ingredients, is used as an arrow poison, both for the chase and in warfare. The inner bark of the young trees, which is very fibrous, is used for making articles of clothing, but on account of the poisonous resin contained in it it is said to cause great irritation to the skin of those wearing such garments. The Upas tree is one of the largest forest trees of Java, rising to a height of from 60 ft. to 70 ft. It is monœcious, the male flowers being very numerous and enclosed in a hairy involucre of several divisions, turned or rolled inwards; the female flowers, which are solitary, grow in the axils of the leaves, in close contiguity to the male flower-heads, and, as they mature, give place to a fruit of an ovoid, succulent, drupe-like form. The plant is not uncommon amongst tropical plants in botanical collections, but beyond its historical interest it has little to recommend it. R.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Planting Fruit Trees.—Where fruit trees have to be planted, that operation should be commenced as soon as the leaves have fallen and the trees are in a condition to move. Nothing is more fatal to successful growth during the ensuing year than late planting; it frequently happens that frost sets in about the close of the year, and then no opportunity is afforded for planting until the buds have begun to move; and in open winters, on heavy, retentive soils, the land is frequently so wet that the soil, when compressed closely about the roots, adheres in a compact mass, and is in the worst possible condition for the development of young fibres; consequently an effort should be made to complete the work as early as possible. "If you plant trees before Christmas they will grow of themselves, if planted afterwards, you will have to make them grow," is an old saying, and one which applies to Apricots, Peaches, Nectarines, Pears, Apples, Plums, and Cherries. "First come, first served," is the way in nurseries; consequently the first purchasers have the advantage. To old borders in which wall trees are grown, I should recommend new soil, where it can be got, being added; from 6 in. to 12 in. will be of the greatest possible benefit to the trees; if well mixed with the already dug ground, this will be better than the most liberal use of manure. Where walls are not to be altogether re-furnished, but only here or there a tree put in, or young ones planted betwixt others that have shown signs of failing, a spit of the old soil may be removed for a space of 6 ft. or 8 ft., and new material added. There is nothing more uneconomical than bare wall space. I should, therefore, recommend amateurs to furnish every available wall with fruit trees, not only such as belong to the garden proper, but also those of dwelling-houses and out-buildings; on both the latter, fruit trees can often be grown when they fail on garden walls; the greater height of the wall of dwelling houses, with the warmth communicated from the fires inside, will frequently ward off frost, so as to preserve the bloom in spring when it is destroyed on low garden walls; and again, especially in the case of Pears, there is plenty of room for the trees to attain height, a condition favourable to fruit bearing. This season throughout half the counties in England I have noticed that the best crops of Pears have been on trees on dwelling houses. Apricots, Peaches and Nectarines should have a southern aspect, although, in the more favoured localities, they will frequently do well on an east or west wall. Amongst the many varieties of Peaches and Nectarines that are offered for sale, some of which are new, amateurs are often perplexed as regards what to buy; there is, however, one Peach—Hale's Early—that has everything to recommend it; it is very early, and the fruit is large and excellent in quality. This should be planted to come in first, and Grosse Mignonne will succeed it. Royal George is still one of the very best of Peaches in every way. Noblesse is large and excellent in quality, but deficient in colour, which detracts from its appearance. Téton de Venus is a late kind of good quality not sufficiently known. Late Admirable will come in a little later. Of Nectarines, Lord Napier is a real acquisition; it is very early, large, beautiful in appearance, and excellent in quality. Elruge, a good old kind, will succeed the last-named; and Violette Grosse a little later. The above half-dozen Peaches and three Nectarines may be relied upon as being the best amongst these fruits. The finer kinds of Pears also succeed best on a southern aspect, and where east or west walls are furnished with this fruit, I should recommend early or second early kinds being chosen, such as Jargonelle, Dunmore, Williams' Bon Chrétien, Louise Bonne, and Marie Louise. Plums and Cherries will generally succeed well on east or west walls; of Plums I would recommend Rivers' Early Prolific, a free-bearing purple kind; Green Gage; Jefferson, a very fine yellow variety; Kirke's, a large purple sort, excellent in quality; and Reine Claude de Bavay, green. To these may be added Coe's Golden Drop, a yellow sort of the very best quality, especially when allowed to hang late. Of Cherries, May Duke is excellent and a free bearer, and Frogmore Bigarreau, Bigarreau Napoleon, and Black Tartarian are all good kinds. North walls may be furnished with Morello Cherries, Gooseberries, and Currants; even though they should not be more than 4 ft. high, the two latter will succeed on them; Gooseberries are not nearly so often planted in this way as they deserve to be, for, when thus grown, they are easily protected from birds, and they will hang upon the trees so as to furnish dessert for many weeks beyond the time they are generally obtainable from trees in open quarters, and walls covered in this manner look much better than when bare. All fruit trees, especially standards and pyramids, planted in the open ground, should have such support as they require placed to them immediately they are planted, as, if their heads be allowed to be swayed about with the wind, the roots are sure to be injured.

A Flower Market and City Square in one.

The new central flower market de la Cité in Paris, with plantation of Paulownias for shade. The scene, as drawn and engraved for us, represents the appearance of the market very early in the morning.

Endive.—A little more should now be put to blanch; boards, such as have been already described, are at this time, when there is danger of frost, preferable to the ordinary tying up; where the latter is practised, and the soil of a light, open character, a little may be drawn up to each row of plants after they are tied up; some dry litter or Fern (the latter where obtainable is preferable) should be kept in hand to throw over Endive that is thus tied up when there is an appearance of frost; or a sufficient number of empty 9-in. or 10-in. pots may be kept near the rows, dropping one over each plant when there is likelihood of frost; the labour entailed in putting them on or off is not more than five minutes for a moderate supply, and by their use I have been able to keep Endive in ordinary seasons without being frozen up to Christmas. It is not well to leave the pots over the plants in the daytime, as I have found when the light was excluded the Endive decayed much sooner than it otherwise would have done.

Celery.—All, except the very latest for spring use, should be earthed up, as after this we might have sufficient frost at any time to injure the tops, in which case it does not keep well.

Winter Onions.—Where there is an inclination to grow these as large as they are capable of becoming, a piece of ground should now be deeply dug and heavily manured, getting the manure well down to the bottom of the trench, say 15 in. or 18 in. deep, and on this some of the autumn-sown Onions should at once be planted ; they must not be dragged up in the way sometimes practised, by which many of their fibres are broken, but carefully lifted with a planting trowel so as to retain all their roots uninjured ; for planting use either the trowel, or an ordinary dibber, but whichever is employed see that the fibres are not doubled up, but put in straight down in their natural position ; plant them in rows 1 ft. apart, and 4 in. or 5 in. asunder in the rows, this will admit of every other being drawn for use in the spring, allowing the remainder to grow to their full size. I have tried both autumn and spring planting with this crop, and find that the present is much the best, the roots attaining a larger size when moved at this time than in the spring, when they are making more active growth ; another advantage is that the check which they now receive has the effect of rendering them hardier and better able to stand a severe winter, should such occur, then those that are allowed to remain in the seed bed.

Winter and Spring Broccoli should at once be laid, turning their heads to face the north ; in this position, the sun, when it does shine, does not injuriously affect the frozen hearts by thawing them in the way that often happens when it shines directly upon them. This laying process, as regards winter Broccoli, has a twofold effect : it checks luxuriant growth in a way that imparts to the plants a hardier condition than if they were allowed to go on growing undisturbed until suddenly arrested by frost ; and the stems, being partially covered right up to the leaves, also receive additional protection. On dry land, in open, unconfined spaces, laying is not so necessary, as in small, confined gardens where the plants, by being more or less sheltered by walls and fruit trees, are in a more tender condition, especially where the soil is of a moist, retentive nature, particularly if the plants have been grown somewhat too near together, as this, more than any other cause, incapacitates them for withstanding severe frost. Veitch's Autumn-flowering Broccoli, or Walcheren, now fit for use or forming heads, are deserving of a little extra attention ; any that are ready may with advantage be taken up and heeled-in closely in spare pits or frames, or they will do well thus heeled on the floor of an open shed, placing some soil upon it for the purpose ; where such a position is available, a mat or two thrown over them at the time of keen frost, will be sufficient protection up to the end of the year. If no convenience like the above exists, the plants may be put close together in a sheltered position under a south wall, where they can be protected with mats or straw ; but wherever placed, the soil with which the roots are covered must, at the time they are put in, be well watered, so as to make it sufficiently moist ; without this, the plants flag, the result of which is to make the heads tough and unpalatable. The way sometimes advised of taking up Broccoli and hanging it in sheds or buildings until required for use, I have found to have the effect of making it so tough that when cooked it was always indifferent in quality.

Parsley.—Some roots should now be taken up and replanted in a frame ; if they have been grown large and strong by treatment such as advised through the season, each crown will furnish as much as half-a-dozen of the ill-grown examples resulting from overcrowding. The plants ought to be put sufficiently near together for their leaves to just touch. In the removal, their roots must be no more broken than unavoidable, and they must have a good soaking with water as soon as planted ; if a glazed frame be available, it will afford the best protection from snow and frost, but the lights must be kept completely off until there is an appearance of such weather. If a frame of this description be not at hand, some boards nailed together, so as to form the back, front, and ends, with a slight framework across to carry mats during hard weather, will be the best substitute.

Castor-oil Leaves and Grasshoppers.—A farmer in California has been experimenting on the leaves of the Castor Bean, and reports them as being deadly poisonous to grasshoppers. He had some trees which the hoppers were destroying, and he scattered leaves of the Castor Bean under them, and adds :—"So remarkable was the result, that an actual count of the number killed under one tree showed 498 dead ones and about 20 in a dying condition. Only a very small portion of the leaves were eaten ; and, judging from the effects of the small portion consumed, I believe there was sufficient material left to have killed ten times as many." He suggests that hedges of the plant be grown around farms, and an occasional row in vegetable gardens.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

October 29.—Sowing Mustard and Cress in boxes placed in heat Potting off Sweet Basil into 6-in. pots, and placing them in a warm house to give a supply during winter ; also potting Tomato cuttings to grow on for early fruiting. Putting a good coat of long litter round the shoots of Globe Artichokes. Clearing off old Rhubarb and Seakale leaves and manuring the ground. Filling pit with manure and leaves that had previously been well prepared for pot Vines. Getting a little Chicory and Dandelion into the Mushroom-house to blanch.

Oct. 30.—Potting a late batch of Primulas and Cinerarias. Removing Pelargoniums from cold frames into Vineries. Nailing up Ivy, Roses, and other climbers on walls, to prevent them being injured by wind, and to give them an orderly appearance. Turning over a large heap of manure, and adding 20 lb. of salt and 1 bushel of soot to the cartload. Putting some new stakes to young trees where blown off by wind.

Oct. 31.—Removing Cinerarias and Primulas from cold pits to warmer quarters. Stirring the soil among Spinach, Endive, Lettuce, Cabbage, and Cauliflower plants. Cutting for use Veitch's New Autumn Self-protecting Broccoli, which is now in fine condition. Mowing, cleaning up leaves, and rolling gravel walks.

November 1.—Taking up August-sown Cabbage plants, and planting borders with the small plants, placing them 6 in. apart, for spring planting. Turning a large heap of leaves and manure for making hotbeds, and covering up Seakale and Rhubarb. Earthing up late Celery when the soil is dry and in workable condition. Getting manure on the ground whilst it is dry.

Nov. 2.—Sowing French Beans in pots and placing them in heat Covering up Endive, and tying up Lettuces to blanch. Clearing out Melon-frames, and preparing them for wintering Endive and Lettuce. Cleaning leaves off the walks, and getting them all rolled down. Giving Leeks and Cardoons a final earthing up. Looking over the Cauliflowers, and turning down leaves where required, and placing some of the forward ones in an open shed.

Nov. 3.—Potting Lily of the Valley for forcing. Planting Daisies Wallflowers, and Myosotis. Getting up Dahlia roots, and storing them away in a dry room. Clearing away Scarlet Runners, and storing away the best of the sticks for the earliest crop another year. Spawning Mushroom bed and covering it with mould. Watering the Pines all through that require it. Fruit in use for dessert :—Pines, Grapes, Pears, Apples, and Nuts.

CULTIVATION OF MEDICINAL PLANTS AT HITCHIN.

The neighbourhood of Hitchin is one which is interesting on many accounts. The spot which Dickens has immortalized as Tom Tiddler's Ground is within a few miles of the town. The geologist will notice here the out-crop of the London basin, and the antiquary will meet with much to examine in the way of flint implements and other ancient relics. The botanist will find in the spring abundance of the rare Anemone Pulsatilla within a few miles of the town, and cannot fail to admire the row of ancient Box trees, with trunks fully 1 ft. in diameter, and about 20 ft. high, which are conspicuous by the roadside near the centre of the town. These are probably the largest and oldest Box trees in England. The plant, which is most extensively grown in the neighbourhood Hitchin, is the Lavender (Lavandula vera). The cultivation of this plant was commenced in 1823, by Mr. Perks, and at the present time is carried on by his son, and also by Mr. Ransom, who commenced its cultivation in 1847. It is to these two gentlemen that our readers are indebted for most of the interesting facts which are embodied in this paper. Both these gentlemen have received medals for the excellence of their productions, Mr. Perks for oil of Lavender, and Mr. Ransom for essential oils and pharmaceutical products generally. The crop at present grown is much affected by the presence of a disease which attacks the plants just as they are beginning to flower, and causes them to wither away by degrees. This disease occurs not only at Hitchin, but also at Mitcham (in fact, it appeared at Mitcham before it was known at Hitchin), and so far as I have been able to ascetain at all the localities in which Lavender is grown. To such an extent has it occurred at Market Deeping in Lincolnshire, that Mr. Holland, who formerly cultivated Lavender there, has now ceased to grow it. The disease prevailed to a considerable extent this year, and on this account, and by reason of the smallness of the crop, the price of oil of Lavender will probably be unusually high. The history of the cultivation of Lavender reveals some curious facts which may perhaps throw a little light on the probable cause of this disease. Formerly the plant was propagated by slips taken from the branches, for the plant does not ripen seed. Whether or not it has lost the property of ripening seed through cultivation, as has been the case with the Rhubarb plant at Banbury, I have not been able to ascertain. In the winter of 1860, owing to a very severe frost, nearly all the Lavender plants were killed, and to secure a crop for the next year instead of taking slips, the roots were parted; and, from that time to the present, the same mode of propagation has been continued. At this time (1860) the disease first appeared. Plants which are obtained by parting the roots of one-year-old plants are much more vigorous and less liable to the disease than those obtained by dividing the roots of those of two years' growth. The first appearance of the disease is indicated by the leaves of one or more branches drooping and withering away; and the remainder of the plant becomes affected by degrees. When the root of a diseased plant is pulled up, the rootlets appear fewer in number than in a healthy plant, and the woody portion from which the rootlets spring is often covered with a white filamentous mycelium, but sometimes only presents a dark colour and wet appearance internally. The appearance of the disease just as the plant has begun to flower, and the fact that the plants now come to maturity in about three years, whereas they used to last five or six years, seems to indicate that the tendency to produce flower and foliage has been stimulated to a greater degree and caused a greater demand upon the root than it is able to meet. The vitality of the plant has probably been lowered by years of reproduction from the stem instead of in the way that nature has appointed, viz., by the seeds. The method of propagating, at present adopted, is certainly one that is very likely to continue the disease, since it may be latent in the divided root of apparently healthy plants. That the disease is not likely to be owing to difference in soil, is shown by the fact that fresh soil or otherwise, manure or no manure, make no difference in its appearance. The method of cultivation is as follows:—The harvest of Lavender flowers is rarely over until the middle of September, so that it is not possible to get the ground cleared and ready for the fresh plants before the end of October or beginning of November. The ground which is to be planted is generally manured beforehand with thirty to forty-five tons of stable manure per acre, but manure is not applied afterwards until a fresh planting takes place. The roots of the old plants are parted sometimes from two, but preferably from one-year-old plants, and the sets dibbled in rows about 18 in. apart. The young plants make a start in growth in March, if the weather be mild with gentle showers, and increase considerably in size in April and May, so that the tufts become on an average about 1 ft. in diameter. If, however, there occur heavy rains so that the leaves are much splashed with soil, the growth is somewhat stopped. In hollows, or where the damp is liable to remain, the young flowering stems, if there be frost in May, are frequently nipped, and the plant either dies or does not send up fresh flower stalks until the end of June, making the harvest a late one. Black frosts do not, however, injure the plants. The sets, if made by parting the roots, flower the first year; if, however, slips from the branches are taken, they are not allowed to flower the first year, lest the young plants should be weakened thereby, but the flower shoots are clipped down close to the stem. In the second year every alternate plant is removed in the autumn and planted elsewhere, leaving the others one yard apart. The second year the plants attain a diameter of about 15 in. to 18 in., and in the third year the tufts are from 2 ft. to 2½ ft. across. Shade has a pernicious effect upon the plants; under the shadow of trees they become starved and produce scarcely any flowers. The growth of other plants between the rows also injures the crop; weeds, too, have to be kept down. In order to prevent injury to the roots of the Lavender plants while removing the weeds, Mr. Perks uses an instrument of sufficient width to pass easily between the rows, and composed of a number of hoe-like blades, the upper portion of the instrument being like a plough. By means of this apparatus he is enabled to cut off the weeds just below the surface of the ground, and at the same time to avoid injuring the tender roots of the Lavender. The plants grow best and produce most blossoms when they have plenty of room and sunshine. If too crowded, flowers are only produced from the centre of the tufts, and not from the sides where the plants come in contact with each other. The weather has considerable influence upon the yield of essential oil. If the days are bright and sunshiny during June and July, the yield will be a good one, but if wet and dull, very often not half the average will be obtained. Mr. Perks informs me that a 200-gallon still will yield about 1¼ lb. of essential oil in a good season, but in a bad one, as in the present year, barely 12 oz. The time at which the flowers are gathered also appears to modify the yield, Mr. Ransom giving as the result of his experience that the product is very much reduced if gathered after the first week in September, the largest quantity of oil being obtained about the middle of August. In collecting the harvest, which usually begins about the first week in August, the flower-stalks of one plant are grasped as far as may be with one hand, and a sickle is used with the other. They are (by Mr. Ransom) then packed in 8-bushel sacks, and carried direct to the still, about fourteen sacks going to a 1000-gallon still; or they are tied up in bundles, weighing about 22 lb. (by Mr. Perks), and as much as possible of the stalks afterwards cut off, and the still then filled up with the flowers. The distillation is commenced at four or five o'clock in the morning, and the still is filled four times a day, the men leaving work at ten p.m. The distillation of each quantity takes about two and a half hours, the largest portion of oil coming over during the first hour and a half. A considerable time is, of course, taken up in filling and emptying the still. The flowers are trodden down in the still by boys, who, for the first day or two, are often severely stung by the bees, which cling most pertinaciously to the blossoms, and appear to be quite intoxicated with the honey of the Lavender, especially towards the end of the season. The water which comes over with the oil during the first hour, being slightly impregnated with oil, is returned to the still, but that which comes over afterwards is allowed to run away. The oil which comes over after the first hour and a half is either redistilled, or sold as inferior quality. The refuse when removed from the still is thrown into heaps, and, when decayed, is returned to the Lavender field. In a good year the Lavender yields from 4 to 6 Winchester quarts of essential oil per acre, and as about 53 acres altogether are cultivated, the average yield of oil for the whole of Hitchin is about 240 Winchester quarts per year. The quality of the oil is said to be affected by the soil and situation in which it grows, so much so that Mr. Ransom informs me he can distinguish the oil obtained from different fields by the odour alone. The oil is improved by keeping up to three years, after which it begins to deteriorate, unless mixed with spirit. Redistillation also improves the quality of the oil, but unless conducted by steam-heat, the loss sustained is not compensated for by increase in commercial value, the loss being nearly £1 in the gallon. The stems are not distilled, as the oil obtained from them is of very inferior quality, and is so small in quantity that it does not pay for labour and fuel.

Belladonna.

About 8 acres are grown of this plant, from which extract is made on the spot. The plants are raised from seed, and, being perennial, are grown on the same ground from seven to ten years, when they are replaced by fresh ones. The crop is not cut the first year, but in the middle of June of the second year, and again at the end of September. The plants usually attain the height of rather more than 2 ft., but if heavily manured they will grow much larger. It is found, however, that in plants which show large leaves and grow rapidly the medicinal properties are less powerful in proportion, even the odour of the plant being weaker. This is somewhat analogous to what is known of the Cinchona trees, in which, as a rule, the smaller the leaves the larger the yield of alkaloid. About 5 lb. of extract are obtained from 1 cwt. of herb.

Hemlock.

Very little Hemlock is grown, the wild plant being preferred. It is said to be plentiful in the neighbourhood, nearly

20 tons of it being sometimes made into extract in one year by Mr. Ransom. From 4 lb. to 6 lb. of extract are obtained from 1 cwt. of herb.

Squirting Cucumber.

Only 2 to 3 acres of this plant are grown every year, there being comparatively little demand for elaterium in this country. The plants are earthed up in winter like Celery, and require plenty of manure applied annually. The yield of elaterium depends much upon the weather, very little being obtained in a wet season. If the month of August be fine and dry, the yield is not only larger but of superior quality. The drug, as prepared by Mr. Ransom, is of a fine ash green colour, and comparatively sweet odour. This result is obtained by pouring off the superabundant liquor as soon as possible after the elaterium has deposited. If this be not done, fermentation is soon set up and the product depreciated in quality. Although Mr. Ransom probably grows more than any one else in England, the demand is so small that some wholesale houses have often not purchased more than 2 oz. in twelve months. That which is exported goes chiefly to Russia.

Henbane.

About five or six acres of the biennial Henbane are grown on the average; but the quantity varies much, being almost a total failure in some years. Mr. Ransom's experience corresponds with that of Mr. Usher, of Banbury, as regards the uncertainty attending the appearance of the plant from the seed. Indeed in one of the fields at Hitchin, in which Lavender plants two years old were in blossom at the time of my visit, only the biennial Henbane had come up, which had been sown before the Lavender was planted there. A small quantity of Marshmallow is also grown by the river side, where it does well.

The above are, I believe, the leading medicinal plants which are grown in the neighbourhood of Hitchin. Mr. Ransom produces at his extensive laboratory a very large number of extracts, essential oils and liquors, and many of these in very large quantity, using as much as 40 tons of Dandelion root per annum. Some of the extracts are such as are rarely asked for in retail shops, but for which there must be local demands. Among these were noticible the extracts of Sarsaparilla, Actæa racemosa, Chelidonium majus, Datura Tatula, Saponaria officinalis, Wormwood (Artemisia absinthium), Angelica (Archangelica officinalis), Centaury (Erythræa Centaurium), Pulsatilla (Anemone Pulsatilla), Blessed Thistle (Carduus benedictus), Walnut (Juglans regia), White Horehound (Marrubium vulgare), Buckbean (Menyanthes trifoliata), St. Ignatius's Bean (Stryohnos amara), Senega, and the alcoholic extract of Belladonna and Ipecacuanha. The extract of Ignatius's Bean is used for epilepsy, and goes chiefly to Australia and China. To give an idea of the extent to which some of these uncommon extracts are used, it may be stated that as much as thirty or forty pounds of extract of Ignatia amara is turned out annually. All these extracts are made in steam evaporating pans, the juice being in many cases expressed from the plants or roots under an hydraulic pressure of 300 tons.—"Pharmæcutical Journal."

New Insect Destroyer.—It would almost be an act of selfishness not to bring under the notice of The Garden so great a boon as Bridgford's Antiseptic Liquid has proved to be to us for destroying insects. After trying various compositions with only partial success, we commenced to use Bridgford's, and have now discarded all others. It psssesses the power of dissolving the oily coats of Mealy Bug and Scale, and effectually removes them; it also enters cracks and crevices where a brush could not go, and makes such places most uncomfortable quarters for any insects that may have taken up an abode in them. A great point in its favour, too, is that it does not in any way damage the foliage of even the most tender plants.—F. W. Moore, *College Botanic Garden, Dublin.*

Japanese Persimmon in California.—This has lately been inroduced into California, and promises to be a great acquisition to choice fruits there. It is of a bright yellow-orange or reddish colour, and is considered equal to the Peach or Pear. It grows to a large size, and is most delicious to the taste. The flavour reminds one of both the Plum and Apricot. Its season is from October to February or March. When dried, it resembles the Fig or Date. There are about forty varieties in Japan, differing in size, shape, colour, and flavour.

OBITUARY.

THOMAS RIVERS.

Thomas Rivers, one of the deservedly best known of horticulturists, died at his home at Sawbridgeworth, the scene of his long and most useful labours, on the 17th inst., aged seventy-nine. He was among those whose work is their best record, the fruits raised by him being known to every good fruit grower, not only in England, but in America and all English-speaking lands. We cannot perhaps now say anything more fitting respecting his life and work than repeat what another horticulturist, who worked in the same garden of Roses with him—Canon Hole—said in The Garden on the occasion of publishing his portrait in Vol. III.:—

"In carrying out for The Garden a Portrait Gallery of those Horticulturists who have given special proofs of their love and skill, whether in their work at home, in their exquisite specimens of superior culture shown at our exhibitions, or in the instructive results of their experience, communicated through the public press—who have most distinguished themselves in the great object of our brotherhood, namely, in their endeavours to amplify all things pleasant to the eye and good for food, to reclaim and restore, to make the desert smile, we shall not find much delay or difficulty in resolving the question of precedence. We want to know who has given, so far as horticulture is concerned, the greatest happiness to the greatest number, and there is no need to appoint committees, or to send abroad commissioners, before we can attain our wish. We have not to seek our hero in "scientific" schools, we shall not find him poring over elongated Latin, over the herbarium, or the "hortus siccus"; our wreath of Laurel, with which we propose to crown him, is not mixed with Botany Bays; we shall not discover him even amid those distinguished men who have made one branch of our gentle art their peculiar study and success; we cannot give the Golden Apple to Venus, because we want something more than beauty; but we must bestow the Palm upon one who has achieved greatness, both in flowers and in fruits, who some forty years ago, found Love asleep among the Roses, roused him, trained him, made a pleasant, popular, man of him—who wrote the first descriptive catalogue of Roses ever published, and the first reliable guide for amateur Rosarians, an excellent manual, now in its tenth edition—who introduced the use of the Italian "Manetti" Rose as a stock on which to bud and graft the more lovely varieties, both French and English; and an admirable nursing-mother it has proved in many cases, where rough old Briareus has failed to rear a family—who subsequently invented orchard houses, and who has originated new varieties of our most luscious fruits. Yes; to Thomas Rivers we must give in our gallery the third welcome, the most conspicuous position, the most favourable light. That light falls on just such a head as one would expect to see above the shoulders of a man who had lived long and laboured heartily among the most beautiful works of the Creator; it falls upon a handsome, thoughtful, kindly countenance. When he who writes was only an entered apprentice in one of the most distinguished lodges ("Rose Croix") of Free and Accepted Gardeners, he would sometimes amuse himself with imaginary speculations as to the personal appearance of his worshipful master at Sawbridgeworth. There must be, he thought, a freshness, a frankness, a ruddiness, a benevolence, a gentle, generous goodness, beaming in the face of one who has such a sympathy for sweetness and beauty. And when we met, pupil and master, this picturesque vision, instead of misconducting itself, as bright dreams will, was realised in broadcloth and flesh and blood. As Stanley walked up to the great explorer, and said 'Dr. Livingstone, I believe,' so could the student in Roses have addressed the professor, without an introduction, 'Mr. Rivers, I've known you for years.' With the place of honour, let us give him also the assurance of our affectionate respect. And surely there must be brightness for such a man in the nightfall of old age, to think how much happiness he has diffused amid his fellows by inducing them to love, and helping them to improve, their flowers and fruit trees; for generations, when the bloom shall be upon the Peach, and the blush shall be upon the Rose, his memory shall live. Mr. Rivers's history is that of most men who have achieved success in their undertakings by constant and unremitting attention to their work. He inherited a small property, and a business in which his enthusiastic love of plants enabled him to foresee a great development. When he began to turn his attention to his profession, Rose cultivation was in a very different position from what it is at present. Standard Roses being principally imported from France, and in small quantities, he determined to visit France and examine the French mode of Rose culture for himself. The success of his earliest literary effort, "The Rose Amateur's Guide," established him at once as an English cultivator fully equal to the French in love of the flower and in skill in its cultivation. The book, in manuscript, was submitted by him to one of his earliest Rose friends, Professor Jones, of Haileybury College, then one of the most profound scholars of the day. Dr. Jones's approval was at once accorded, and "The Rose Amateur's Guide" was received by the public as it was received by Dr. Jones. While pursuing his Rose researches, the pyramidal mode of fruit-tree training, as universally practised in French and Belgian gardens, attracted his attention—always keen on matters likely to prove of general utility—and the "Miniature Fruit Garden," modest and small in its infancy, inaugurated a new era of fruit cultivation in English gardens. Although for years practised in France and Belgium, pyramidal fruit tree training does not appear to have been much employed in England until Mr. Rivers drew public attention to the extraordinary facilities given by this mode of culture. The frequent failure of the fruit crops led him to devise some simple and effective means of protecting fruit, and he hit upon the system of growing trees in pots. By very small degrees, and with constant experiments, extending over some years before finally giving the culture a name, he perfected the "Orchard House." Like the "Rose Amateur's Guide," and the "Miniature Fruit Garden," the "Orchard House" began at the beginning. During the time occupied in developing his ideas on these heads he was constantly occupied in studying and forming large collections of fruits, and nearly every Continental new fruit found its way to Sawbridgeworth, and most of them eventually to the fire heap. Mr. Rivers was at one time a most ardent cultivator of ornamental trees and herbaceous plants; his collections of both were at one time very large, and he was quite as enthusiastic a lover of these as of Roses. Loudon gave him the benefit of his vast knowledge, and took great interest in his various collections; in one tribe, that of the Oaks, his collection was unusually extensive. He has made good use of the "Orchard House" to endeavour to improve the varieties of Peaches. The few sorts selected as worthy of naming have been taken from more than 1500 seedlings, and it may give some idea of the work done when it is stated that these were all grown under glass. Mr. Rivers has been a large employer of labour; a small agricultural village has, by the continued employment of the capital required in carrying out his ideas, all of which necessitated labour, been benefited by the large sums annually spent. Seventy-six years is a long measure of life for a man, but few men can look back with greater satisfaction than Thomas Rivers can on a life worthily spent and deserving in every way of the commendation that, as far as lay in his power, he has been a good citizen of a great country."

We cannot do better than conclude this very imperfect record written four years ago, of a long life of interesting and useful work than with the following short extract from a letter just received from Canon Hole:—"It pleased God to amplify the happiness of His creatures through the instrumentality of Thomas Rivers. Many a home was made brighter, and many a heart lighter, by those flowers and fruits, 'pleasant to the eye and good for food,' which he loved, and led others to love so dearly. I hope in my heart, and pray from my soul, that he has gone from Paradise Lost to Paradise Regained."

FLOWERS ON GRAVES.

(A PAGE FROM AN OLD BOOK).

I HAVE read with much pleasure the papers which have appeared in THE GARDEN on Shakespeare's flowers, and I thought that the following passage from Weaver's "Funerall Monuments" might not be unacceptable to your readers. "The Romanes," says he, "had an order that within some while after the obsequies, they would strew divers flowers, and sweet odours, upon the sepulchre, as the people did on the funerall monument of Scipio: and also they accustomed yearely, to garnish, deck, and adorne, the tombs or graves of the dead, with poesies, crownes, and garlands of all sorts of flowers. 'Husbands (saith Saint Jerom) were wont to straw, spread, or scatter over and upon the graves and sepulchres of their deceased wives, Violets, Roses, Lillies, Hyacinths, and divers purple flowers." But above all flowers in these ceremonious observances, the Rose was in greatest request, and had the sole pre-eminence. 'The Romans,' saith Kirkman ("De Funeribus Romanorum"), 'loved Roses to such an extent, as sometimes to have ordered as a last injunction—that their tombs should be strewn with them. Legacies were sometimes bequeathed for that purpose, to which there was often this stipulation attached (as we read in the inscription of Ravennatus that every year they should bring Roses to his tomb and hold a feast there).' To which Passeratius, in his "Rosa," thus alludes—

Unto the tombes and spirits of the dead,
The Rose is grateful, of all the flowers the head.

And Anacreon, in praise of the Rose, thus sings in one of his Odes (Weaver uses a Latin translation; I replace it by a modern one):—

What's the garden's grace and glory?
But the Rose, but the Rose?
Giving gods and mortals pleasure,
'Tis the Rose, 'tis the Rose!

The ancient Ethnicks did hold the springing of the flowers, from the grave of a deceased friend, an argument of his happinesse: and it was their universall wish, that the tombe stones of their dead friends might be light unto them: and that a perpetuall springtime of all kinde of fragrant flowers might incircle their verdant graves."

W. NEWTON.

Keeping Late Apples from Shrivelling after they are Gathered.—There is often a great loss arising from late Apples and Pears shrivelling after being gathered. Sometimes the cause may be gathering too early; in other cases the fruit-room may be unsuitable for keeping late fruit; and there are some kinds of Apples, such as Court Pendu Plat, that will shrivel almost under any circumstances, if managed in the ordinary manner. The best way of keeping late Apples that show a tendency to shrivel is to pack them in jars, boxes, or barrels, and strew dry sand amongst them, taking care, of course, that both in gathering from the trees and in packing no bruised or bird-pecked fruits are placed amongst that which is sound; they should be stored in a dry, cool place, and not disturbed until required for use.—H.

Garden Labels.—I have given the subject of garden labels a good deal of consideration, and now send you one which I consider to be the best of all. I have had it in use for over three years. It is easily made, and the material (wood and iron combined) is cheaper than the ordinary wood tally, 6 in. long. The board of which the labels are made, is first planed and then cut into strips, and these are afterwards cross cut; the holes are made with a sharp bradawl, and the galvanized wire stuck in. They last many years, and they can be taken up and put down close to the plants without injuring the roots.—D. MC. C. MAHONY, *The Island, Rochestown, Cork.* [The label sent is in the form of a T, only it has two supports instead of one. The head is deal and the supports galvanized wire.]

Testimonial to Mr. Robert Foulis.—Mr. Foulis, gardener forester, and estate overseer at Fordel, was entertained to dinner the other day in the Albert Hotel, Edinburgh, and presented with a gold watch and a purse of sovereigns, on the occasion of his having completed his fiftieth year in the service of Mr. G. W. M. Henderson. He was also presented with a handsome gold brooch for his wife. In returning thanks, Mr. Foulis said it was gratifying to him to think that, after having lived amongst friends for fifty years, at the end of that period he was esteemed and respected by them. He felt that the merit attached to the position in which he was now placed was principally due to Mr. Henderson, who had proved a most excellent, kind, and indulgent employer, and one who had done a great deal to improve his estate. Although he had been a long time at Fordel, he had not attained to the length of service of his predecessor, who was gardener and forester there for sixty-three years—113 years in all between them.

NOTES AND QUESTIONS—VARIOUS.

Mandevilla suaveolens Variegated.—I should be much obliged if any of your readers can tell me if there is a variegated form of Mandevilla suaveolens in cultivation, because amongst a batch of seedlings raised in the spring I have one beautifully variegated.—A. BARTLETT.

Hoop-petticoat Narcissi.—"A.P." in his remarks on these (see p. 345) says, "they are perfectly hardy, and can readily be obtained." Will he kindly say where N. Bulbocodium serotinus (true), is to be had, for I cannot get it anywhere? He seems to be more fortunate than others with N. Clusii, but I should like to know how his bulbs are for blooming this autumn? My experience is that the blooming improverishes the bulbs, and that a succession of flowering roots must be kept up.—A. R.

A Town Vine.—The Vine on the house, 18, Merrion Square, North, is just now maturing a goodly crop of fair average-sized bunches. In fact, it is one of the best crops we have noticed any year on this citizen Vine.—"Farmers' Gazette."

Keeping Gourds in Winter.—Keeping Squashes in winter seems to be attended with considerable difficulty. They cannot be kept where it is damp, as in most cellars, or where frost can reach them, nor will they keep so well where it is very warm. The best conditions for keeping them seem to be where the air is cool and dry, yet safe from frost. An attic chamber until winter, then a closet near the chimney where the frost cannot reach, or the temperature does not rise very high, is the best most famalies can command. Extensive market gardeners often keep them in houses built for the purpose, when they can maintain an even temperature by the aid of fires and ventilation.—Mass. Hort. Report.

Mr. Ruskin will, during the present term, give a course or lectures as Slade Professor at Oxford, on landscape painting. The course is to consist of twelve readings from his "Modern Painters," and the passages which Mr. Ruskin thinks are likely to be permanently useful will be collected. The lectures will commence on November 6th.

No. 311.] SATURDAY, NOVEMBER 3, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

POTATOES FREE FROM DISEASE.

I fear that we shall never be able to cheat the Potato disease in the manner suggested by "A. D." (see p. 315), as I am now pretty well convinced that the haulm is quite as susceptible as regards the attacks of its great enemy in its earlier stages of growth as when it is approaching maturity. My reason for this belief rests upon the result of an experiment made here this summer. Some sets—which had been kept over for the purpose, and which were set with those short green spurs upon them which the Potato-grower so loves to see at planting time —were put into well-prepared ground, in an open, sunny aspect. When the disease appeared in this district, they had made about three weeks' growth, and were vigorous and healthy; they, however, suffered as badly, and even worse, than those which were upon the point of completing their growth; they were, in fact, swept entirely off, the change being effected in a few days, there remaining but blackened leaves to mark the spot where they had been. This I consider pretty conclusive evidence that late planting will never guarantee immunity from the ravages of the disease; neither have I any faith in preventing or stamping it out. In fact, I consider that too much stress has already been laid upon the efficacy of preventives and curatives, and the raising of disease-proof Potatoes. In order to ensure us against the wholesale destruction of the Potato crop, we shall have to place reliance upon some more systematic and intelligent mode of culture than that at present practised. Speaking from experience, I feel warranted in making the assertion that any one possessing ordinary intelligence may secure a crop of Potatoes sound and free from disease; and this result may be obtained not occasionally and in favourable seasons, but even when the disease appears in its most virulent form. The method which I advocate is that of cutting off the haulm, a system which, although almost as old as the disease itself, is but seldom practised with success, and about which many hazy, undefined notions prevail. I have often heard the assertion made that cutting off the haulm does not prevent the tubers from going bad, neither will it if the operation be delayed until the fungus has established itself. One or two days delay will often suffice to render the removal of the haulm almost useless; the tuber itself may appear perfectly sound and healthy and to the eye untouched by disease, but the fatal virus has already descended and established itself therein, to show itself later in the season. In order, however, to carry out this system, and reap the full benefit from it, certain points in reference to the general culture of the Potato must receive greater attention than they now do in a general way. There are many painstaking growers who do not shrink from any amount of labour or care which may be necessary to insure the well-being of the crop; but, as a rule, Potato growing is apt to be conducted in a rough, hasty manner. In the first place, the sets must receive more careful preparation than is now generally accorded them; they should be kept in such a way that they do not lose any of their vitality, and may therefore be depended upon to come quickly and strongly into growth. The soil should be of the very best description, so as to insure a healthy and vigorous development. By preparing the sets they may be planted considerably later than is generally done, thereby decreasing the danger of a check from spring frosts, and, the soil being adapted to their quick growth, the tubers will naturally be developed rapidly. The great point to be kept in view is to promote and accelerate the growth of the tuber as much as possible, so as to get a fair crop by the time when the disease appears, on the faintest approach of which the haulm must be immediately sacrificed. This system was explained and practically demonstrated to me some twenty years ago. I have since had considerable proof of its efficacy. Last season the approach of the disease was heralded, as it generally is, by warm, moist weather. The haulm of a portion of the crop was cut off close before the disease appeared, and of these not a tuber was diseased at lifting time. The remainder, with the exception of a few roots, were cut down, or rather the haulm pulled up as soon as the first indications of disease appeared, and of these a good percentage were diseased; but of those which were left to their fate fully two-thirds were found to be rotten. To ensure perfect immunity, I believe that a little loose soil should be drawn over the tops of the cut stems. It may be urged that the cutting away the haulm will prevent the proper maturation of the tuber, thereby depreciating it in quality—but what happens when the crop is attacked by disease? no growth can take place when thus paralyzed, and it unfortunately happens that the largest and best tubers suffer the most. At the worst it is better to secure a crop, even if somewhat deficient in quality, than to get none at all. How many of the working-classes, to whom the Potato is one of the mainstays of life, would this year have been glad to secure their crop upon those terms. Let me briefly summarize my ideas as regards the culture of Potatoes for the future. 1. Prepare the seed; 2. Plant upon well-prepared ground; and 3, Cut off the haulm on the approach of the disease; or, better still, as soon as a fair crop is seen to be formed. By following these rules a sound crop of fair-sized Potatoes may be ensured. Those even who might not care to treat their whole crop in this way, might at least operate upon a portion of it by way of experiment. John Cornhill.

Byfleet.

THE CHINESE YAM.

(DIOSCOREA BATATAS).

When this Yam was brought prominently into notice, during the great Potato failure some thirty years ago, it was thought by some that a trustworthy substitute for that valuable esculent had been found. Various difficulties, however, chiefly of a mechanical character, soon stood in the way of its extended culture. A root that buries itself in the ground 2 ft. or 3 ft. deep, however much favour it might find in China, where labour is plentiful and cheap, could scarcely be considered suitable for this country. Prizes were offered for specimens of it at some horticultural exhibitions, but its culture, nevertheless, fell off almost before it had received a fair trial, or obtained credit for the good qualities which it really possessed. There are, however, still a few gardens in which it is grown and appreciated. It must have a deep soil, and if a sufficient depth cannot be obtained in any other way, it should be thrown into ridges 3 ft. apart, and the sets planted on the top 1 ft. asunder. When the crop is taken up, the small roots should be reserved for sets; the crowns, and the long, tapering necks of the large roots can be preserved in sand till spring, when they can be cut into suitable pieces, with one or two buds each, for planting. There need be no difficulty either as regards its propagation or cultivation; all that is required is a deep, loamy soil, and the exercise of some care and patience when taking up the crop, as, unlike most of our cultivated roots, the thickest end is at the bottom; hence the necessity for opening a good trench and getting well under it. This Yam has a slender, twining haulm, which, in good soil, will grow 5 ft. or 6 ft. high. In order to encourage a rapid development of the root, the growth of the top should be assisted by having a row of stakes (Pea sticks will do) placed amongst the plants, up which they will climb and take posession. When fully developed, the plants produce freely in autumn long racemes or clusters of small white flowers, which are by no means unornamental. The best way of cooking the roots is to bake them whole. H.

EARLY ASPARAGUS WITHOUT ARTIFICIAL HEAT.

Light, movable, glazed frames have done, and are still doing, much to forward such crops as Asparagus early in the season without the litter and inconvenience attending the use of fermenting materials. All that is required to be done is to remove the old stems at once from the permanent beds (if not already done), give a light sprinkling of salt and guano, loosen up the surface with a fork, and place the frames over the beds at once. If the latter run north and south, span-roofed frames will be the best, with the lights made to hinge on the ridge piece; they can be made any length and width that may be desired, by any carpenter, and some hothouse builders make a specialty of such protectors. By putting on the frames now, and keeping the lights close, the warmth that is still in the ground will be, in a great measure, retained and husbanded, and the result will be good-flavoured Asparagus, fit to cut at least a month or six weeks before it can be obtained from exposed beds. After Christmas, a covering of mats on cold nights will still further accelerate growth. If the cutting be not continued too long, and the growth during summer be encouraged by liquid-manure, there is not much danger of prematurely exhausting the beds. A very light crop of Radishes may be sown the first week in January, or now, without doing much harm, if thinned out well and the whole drawn as soon as they are fit for use. When the frames are removed from the Asparagus bed they may be used as ground Vineries, or for growing Cucumbers or plants in pots, as well as for many other purposes; in fact, there is room for a very considerable extension of this kind of gardening.

E. H.

FRENCH BEANS THROUGHOUT THE WINTER.

We have still a fair supply of French Beans out-of-doors, but they cannot last much later than November 1. By that time, those which were planted in a low pit about the middle of August will be ready for use. These are followed by a later-sown batch in the same pit, and after they are done, those sown in pots come in. The earliest in pots are just about 6-in. high, and will be fit for use by the first or second week in December. Another sowing will be made at once, to succeed these, and to come in at Christmas, and after that, sowings will be made every three weeks until the middle of March, which will give a constant supply of Beans until after Easter. French Beans are not difficult to force. For some time I have always sown the seed in 4-in. pots, and when the young plants were about 6 in. high, shifted them into 8-in. ones. With six or eight in a small pot, I found that they became very much crowded before they were many inches high, and that the pots became so full of roots that they required water nearly every hour in the day, and if they chanced to become the least dry it checked their growth very much; but now I never start them in small pots, but sow the seed at once in the pots in which the plants are to remain. Several dozen of 8-in. pots are cleaned, and about 1 in. deep of crocks is placed in the bottom of each; the soil, which consists of one-half loam and the other half leaf soil, is then placed over these to the depth of 3 in., and made very firm. Seven or eight Beans are laid on this, and covered over with 2 in. of the soil; this is also made firm, in order to prevent its becoming quickly dry. The pots are then placed in a house, where the heat is about 50° at night and 70° during the daytime. No water is given until the green leaves appear, then they are never allowed to become dry. Just before they come into flower they are top-dressed with a rich mixture, and at the same time twigs are put into each pot to support them when the Beans become heavy. Liquid manure is never given until the pods are visible. As one batch is exhausted another takes its place. Osborn's Forcing is the only one we use for forcing; it is a compact-growing kind, and each pot will produce from six to eight dozen pods. Canadian Wonder, although excellent out-of-doors, grows too tall to cultivate under glass. Cambrian.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Fine Tomatoes.—We have recently weighed a sample of Tomatoes grown by our correspondent Mr. Gilbert, of Burghley Gardens, some of which weighed twelve and a-half ounces each. As may be imagined, these formed a striking contrast with such fruit as are obtainable in the market at this season. If anything like such produce were obtainable for general use, taste for this vegetable would grow even more rapidly than at present.

Early Snowball Cauliflower.—Although when grown with all other sorts of Cauliflowers at Chiswick, this variety was classed as similar to the Early Dwarf Erfurt, the earliest of all kinds, yet it enjoys a better reputation as the Early Snowball, and truly the milk-white character of its heads renders it thus fitly named. Originally obtained by us from Denmark, it has remarkably well maintained its character for earliness, dwarfness, and purity of colour. From plants raised from seed sown in June, I am now cutting heads of the finest quality; comparison with any kind almost fails to describe the delicate tenderness of the heads, which are of medium size, and very firm. It is a first-class kind. —A. D.

Disease--proof Potatoes.—The sorts that have fared the best during the seasen as regards disease, and that come nearest to the idea of "disease-proof,', are the following:—Ruby, Climax, Model, Alexandria Kidney, Salmon Kidney, Scotch Blue, Schoolmaster, Snowflake, King of Potatoes, Taylor's No. 1, King of the Kidneys (Covent Garden Perfection), Sedilla, McKinlay's Pride, Radstock Beauty, Early King, Magnum Bonum. In order to separate the goats from the sheep I made a note of the sorts that suffered the most from disease on my ground in the past season. They were Emperor, Blanchard, Ashtop Fluke, Porter's Excelsior, Purple King,* Crimson Walnut Leaf,* Breadfruit, Early Rose, Garibaldi, Lye's Favourite, Grampian, Brownell's Superior,* Purple Ashleaf, Early Don. Those marked thus* were the worst.—P. McKinlay, in "Gardener's Magazine."

MY TOWN GARDEN.

As all agree in having flowers, but differ most widely as to the extent to which their culture ought to be carried, I propose to limit my observations, as regards what I have to say respecting my little garden, to hardy border plants, believing that my remarks may be of use to many who are in possession of but a limited extent of ground, or who can afford from their professional pursuits but a limited portion of time for the practice of what must be regarded as the most healthy employment and most delightful recreation in which any one can be engaged. To none, however, save the idle, the curious in botany, or the apprenticed who must know their calling, can the enormous lists of plants and flowers—grassy and fibrous, bulbous and tuberous, annual, biennial, and perennial, hardy, semi-hardy, and tender, indigenous and exotic—without, in most cases, a word on culture—be otherwise than confusing. To reduce this apparent chaos into something like reasonable bounds, adapted to the requirements of many who live in the suburbs of large towns, I shall only name and describe those hardy plants to which I have myself taken a liking, on account of their beauty and easy culture, out of all I have tried during a period of more than thirty years. As my garden was planned and laid out in 1843, and approved by good horticulturists, it way be useful to some if I describe its form before going into the details of the flowers that are planted in it. The house itself is a detached villa containing ten rooms, with the windows of the drawing-room opening into the garden through a small conservatory; the aspect being south-west. The garden is entered at the middle by going down two stone steps, on the right and left of which is a light iron railing, along the edge of a pavemented portion extending to the walls on both sides. The piece of ground set apart as the flower garden is 36 ft. wide by 130 ft. in length. This is entered by a straight concrete walk 6 ft. wide, which, at the distance of 22 ft., comes to a fountain or small fish pond, 9 ft. in diameter, in which the Nymphæa alba, or White Water Lily, has bloomed luxuriantly for nearly thirty years. I had other aquatics, but the White Lily bloomed so beautifully, and for so long a time every season, that I allowed it to appropriate the whole of the water to itself. The centre walk here opens out into two parts, 4 ft. wide, and passes round the pond, meeting again at the other side; passing on straight, with the 6-ft. width, for 24 ft. further, it comes to a small rockwork or nidus, about 3 ft. high and 10 ft. in diameter, on which grow some fifty or sixty Alpine plants. I sholud here state that from the commencement of the walk, along the railings and the boundary walls, until we pass the pond, there is a 4-ft. border, and between the borders and the walk, on each side, there are plots of Grass 11 ft. wide and upwards of 30 ft. in length. After passing the pond, on each side of the walk, there are two very fine Araucarias 23 ft. high. At the rockwork, the 6-ft. walk again divides into two, 5 ft. wide, going round, and then straight on, with the 6 ft. width, for 24 ft. more, when it reaches a round bed, 9 ft. in diameter, with a sun-dial in the centre. On both sides of the walk from the pond, round the rockwork, and on to the sun-dial, there is a limited but choice collection of dwarf Hybrid Perpetual Roses on Manetti stocks; and, behind them, clumps of Lilies are planted alternately, that is, quincunx fashion, a clump of Lilies being planted behind each of the spaces left between the Roses. Behind the Lilies there is a good collection of evergreens, forming a shrubbery, the tallest being placed next the wall. The planting of the sun-dial bed has been done in accordance with the instructions given in "Hardy Flowers" (page 12). Round the dial pillar is planted a circle of Tritoma grandis; around that a ring of the white Anemone Honorine Jobert, and Rudbeckia Newmanni, mixed plant for plant; and outside of that again is a circle of the herbaceous Sedum spectabile (sold and known as S. Fabaria) The walk having rounded the dial-bed goes on 27 ft. further, when it reaches a summer-house, on both sides of which there are raised mounds, containing a good collection of hardy Ferns, shaded by four Lime trees, which I keep within bounds by careful pruning. Next the walls, between the shrubberies and the Ferns, there is another 4 ft. border, and between them and the walk in the centre, are two more plots of Grass 11 ft. wide, and about 35 ft. in length. Let us now advert to the borders I have mentioned, which, in their turnings and windings, extend a length of upwards of 300 ft., and includes hundreds of hardy plants, which I shall now more particularly describe :

Larkspurs.—These constitute an invaluable class, varying in height from 2 ft. to 5 ft., with colours composed of every shade of blue, from azure to deep indigo, and almost black. At present we have in our garden Delphinium Wheeleri, bright Prussian blue, with a black eye; Prince of Wales, azure blue, with white centre, very effective; Hendersoni, pale clear blue, with a white eye; Nahamah, violet blue, very large flower; Beauty of Peronne, peach, shaded with blue; Triomphe de Pontoise, pale blue; Barlowi, deep blue; Bicolor grandiflorum, brilliant blue, with a white eye; Belle Alliance, porcelain blue; Madame Jacotot, very fine, clear pale sky blue; Beauty, bright gentian blue, with a white eye; Herman Stenger, white eye, inner petals violet and pink, corolla bright blue; Formosum, brilliant Prussian blue, tinged with purple, eye white; Belladonna, sky blue, with a white eye. Madame Rougier, brilliant blue, with white centre; Alopecurioides, deep blue, and one of the finest. As regards their culture, very little need be said, as they are a very accommodating class of plants. They will succeed in any ordinary garden soil, but they are improved by being liberally manured, giving them plenty of water during all stages of their growth. They are easily increased by dividing the roots late in autumn or early in spring; and if lifted and transplanted every two or three years they will grow more vigorously and keep longer in a healthy state than they otherwise would do. Their style of growth is bold and striking, and if a little care be taken to move the flower-stems as soon as they have bloomed, they may be kept in flower for a very long time.

Phloxes (Decussata, or late-flowering section).—These form another equally valuable class, concerning the merits of which too much cannot be said. We have some in our garden now in full bloom. They form magnificent pyramidal bushes, from 18 in. to 3 ft. in height, the colours varying from pure white to all shades of crimson, red, and purple. Their culture does not differ from that recommended for Larkspurs. Our favourites at present are :—Venus, silvery white, with bright purple eye; Liervalli, dark rose, striped with white; Countess of Breadalbane (now in bloom), brilliant crimson lake; Flora McMab, a delicate rose-pink, with a brilliant magenta eye; Madame Delamere, salmon-crimson; Doctor La Croix, bright crimson, with a deep coloured centre; Jules Roussel, French white, with a purple eye; Edmond About, rosy self; Madame Nouvelet, rosy lake, with a peep crimson eye; Lothair, scarlet lake, shaded with purplish, violet; Amabilis, rosy-salmon, with a purple eye; La Candeur, pure white, with a large cerise eye; Madame Verschaffelt (now in bloom), bright salmon; Madame Fontaine, salmon-pink; Mrs. Grundy, puce and white, with a fine eye; Froment, white, with a purple centre, shaded with deep blue on the edge; Queen of Whites, pure white, very fine truss; Anais Forel, white, suffused with purple; Géant des Batailles, salmon-orange; Monsieur Guldenstuck, rose; violet, with purple scarlet centre; Madame Crouse, brilliant self, as large as a florin; Captain Speke, light pink; Mrs. Laing, delicate rosy-lilac, profuse bloomer; Le Lion, crimson-lake, with a large-brilliant crimson eye, and corolla tipped with same colour; Souvenir, de Mons. Berryer, crimson with, a purple centre; Edith, white, with a crimson eye; Madame Domage, white, with large carmine blotch in centre; Brilliant, rich vermilion, with a carmine eye; Gladstone, rosy lake, truss very large and attractive.

Pyrethrums (Double-flowered).—These constitute a very showy and distinct class of herbaceous plants, well deserving of culture in every garden. They are neat and compact in habit, and produce their large and beautifully-formed Aster and Chrysanthemum-like flowers, varying in colour from pure white to brilliant crimson, in profusion from early in May to late in October. They are thoroughly hardy, and are unsurpassed for mixing in the shrubbery, or for the middle or background of borders. Their cultivation is somewhat similar to that recommended for the last two classes, but in dry weather they require a more than ordinary supply of water. Under a burning sun they flag very much, but a quart of water poured over the roots will make them spring up again almost instantaneously. The varieties which we have at present are the following, viz., Boule de Neige, white, slightly tinted with rose; Carneum plenum, blush white; floribundum plenum, rosy-pink; Galathee, light rose; Gloire de Stalle, rich glowing purple-carmine; Hermann Stenger, rosy-lilac; imbricatum plenum, rich purplish-carmine, tipped with white; Modele, bright rosy-crimson; multiflorum, rosy-crimson, with an orange centre; Nemesis, lilac-carmine; niveum plenum, pure white; Prince Teck, brilliant crimson, with an orange centre; Progress, rich crimson, with an orange-brown centre; Rev. J. Dix, rosy-carmine; Roseum album, rosy-purple, with a white centre; Roseum perfectum, outer petals pale red, centre delicate rose, spotted with white; Rubrum plenum, outer petals rosy-purple, centre deep rose; Solfaterre sulphur, with golden-yellow centre; Titiens, delicate rosy-pink, with orange-yellow Anemone-formed centre.

These three classes of plants, with their varieties, would of themselves be enough to fill a good-sized suburban garden with a blaze of beauty during a great part of the year; but we have others to which I shall allude on another occasion.

L. E. X.

NOTES FROM KEW.

In the Orchid House there are several good plants in flower. First on our list, if rarity can entitle it to that position, is Ione palearea of Lindley, a native of the Himalayas. This is the first time we have seen Ione represented in any collection of living Orchids, and a long search for it through many catalogues, English and foreign, has been unsuccessful. The genus numbers seven species, all tufted epiphytes with pseudo-bulbs, bearing a single coriaceous leaf, and a radical scape ending in a spike of white, violet, or purplish flowers. The species above-mentioned has long membranous sepals slightly veined with purple, very small lateral petals, and a large dagger-shaped purple lip, terminating in a tongue-like, thickened point. The very pretty little Saccolabium Calceolare is worth notice; it was introduced to Chatsworth from the East Indies in 1837 by Gibson, the botanical collector of the then Duke of Devonshire. It grows on the Rhoosea Hills, at an elevation of about 4000 ft. above sea-level, and seems to shrink from much light. The small, compact growth, and neat spikes of yellow flowers, recommend it to those who do not always look for size and glare among their floral pets. Pleurathallis Grobyi is a perfect little gem in its own way; it was imported to this country from Demerara by Mr. Bateman, and is one of a section in which the creeping rhizome is very nearly suppressed, consequently the tiny leaves are produced in a dense tuft. The Kew plant is grown on a small block suspended from the rafter; the leaves are perhaps from 1 in. to 1½ in. in length, and the flower-scapes hardly 3 in. The little flowers are yellow, dashed with reddish-brown. Lockhartia elegans, from Trinidad, has a most peculiar style of growth. The flat stems are clothed with numerous closely-placed distichous, equitant, very obtuse leaves, and appear totally unlike those of any other Orchid we can at present remember. The individual flowers are small, but the much-branched, graceful inflorescence, and the number of the yellowish-white flowers, make up somewhat for deficiencies in other respects. Oncidium triquetrum, introduced by Rear-Admiral Bligh from Jamaica in 1793, is a very pretty and easily-grown species; it has no bulb; the laterally-compressed triquetrous leaves rise immediately from the root, are few in number, distichous, and 4 in. to 6 in. long; the petals are white, tinged with pale green, variously spotted with purple. Among the Lælias, the prettiest is L. Perrini, an easily-cultivated species from Brazil. There are several specimens in flower, somewhat varying in merit. When growing, a high, moist temperature must be maintained, and a liberal supply of water given at the root. When at rest, this species must be kept dry in a temperature of about 45°. Cattleya maxima is represented by several plants of various worth. One is of a flesh colour, and not to be compared with its neighbour, a fine pink flower, with a coarse network of beautiful crimson veins. As a species, this comes very near C. Mossiæ annd C. labiata, but differs from them in its long, channelled pseudo-bulbs and its very convex, wavy petals. It is very impatient of water on its leaves, but wants a good supply at the root during summer. Cœlogyne fimbriata has a three-lobed crested and ciliated lip, but the rather dingy yellow and brown flowers do not take the fancy of most Orchid growers. It was introduced into this country from China. Restrepia antennifera is a beautiful species of a most singular genus. It is a New Grenadan epiphyte, and was first discovered by Humboldt. The stems are tufted, simple, 2 in. to 4 in. high, clothed with loosely-imbricating sheaths, which are whitish, spotted with red. The ovate leaves are shortly stalked, about 3 in. long; the scapes are longer than the leaves, very slender, and one-flowered. The dorsal sepal is 1½ in. in length, and tapers into a filiform tail with a purple, club-shaped end; the lateral sepals are united into a serrulate blade as long as the upper sepal, and towards the base have a subulate appendage on each margin. The whole groundwork is yellow, thickly dotted with close-set rows of large red spots. Dendrobium Johannis, discovered by Mr. J. G. Veitch on the coasts of North Australia, has peculiar twisted flowers, which exhale a very agreeable odour of honey; the colours are brown and yellow, streaked with orange. several Oncidiums are in good condition, among them being O. Rogersi and O. verrucosum. There are also Epidendrum purum, Burlingtonia decora, Gongora odoratissima, and several Cypripediums.

G.

NOTES OF THE WEEK.

The Pitmaston Pear.—Very fine specimens of this may now be seen in Messrs. Webber's window in Covent Garden. It will be remembered that we published a figure of this remarkable fruit at p. 284, Vol. XI. It is the best English Pear raised for many years—probably the best ever raised with us. It is, we observe, offered for sale under different names.

Dracæna fragrans.—A fine specimen of this is now in flower in Mr. Wills' nursery, at Brompton; the flowers are remarkable for their fragrance, but we think the plant more valuable for its stately port. A well-grown specimen like this is one of the noblest of fine-foliaged plants.

A Pretty Effect in our Orchid-houses.—One of the best effects in the Orchid-houses at Messrs. Veitch's results from a mixture of profusely-flowered plants of the golden Oncidium varicosum, O. Rogersi, and the winter-flowering Calanthe Veitchi and vestita. Several gracefully-drooping spikes of the chocolate-coloured Oncidium crispum, and other brightly-coloured flowers of Orchids on blocks, are also in beautiful condition.

Bouvardias in Autumn.—The charming white and scarlet sweet-scented flowers of B. jasminiflora and B. Hogarthi now form a striking feature in Messrs. Low's nursery at Clapton. Several large houses are entirely devoted to them, in which hundreds of plants are now in bloom. Contrasted with a rich profusion of bright green foliage, their clusters of flowers present a sight seldom to be met with.

A Violet-scented Winter-blooming Orchid (Oncidium tigrinum).—This fine, large, and free-blooming species is worth growing for its Violet scent alone. It is now in abundant bloom in Mr. Bull's nursery, both in pots and on blocks. It is a cool house kind, a native of Mexico. The flowering shoots grow from 3 ft. to 4 ft. long, and the house in which it grows is scented like the vicinity of a Violet-bed.

Allamanda Hendersoni.—I have a plant of this here now beautifully in bloom. It is growing in a 12 in. pot, and covers the upper part of a span-roofed house, 18 ft. long by 14 ft. wide. It began to flower late in April, and has now over 100 blooms expanded upon it. It is four years old, and promises to continue flowering until the Poinsettias come in.—A. Offer, *Felcourt, East Grinstead.*

Orchids at Drumlanrig.—There are, in the East Indian Orchid-house at Drumlanrig, a plant of Cypripedium Roezli, which has borne, on six flower-stems, fifty-eight blooms, and a plant of C. Sedeni which, on three branched flower-stems, has produced seventy-five blooms. These plants are in glazed pots, and, as the flower-stems are not yet exhausted, they will produce a good many more blooms. In the cool Orchid-house there are about thirty spikes of Odontoglossum Alexandræ in bloom and coming into that condition.

Chrysanthemums are fast coming into flower in the London nurseries, and there is a pretty good show of them already to be seen in the Temple Gardens. Tree Carnations are also beginning to flower. Bouvardias, Cyclamens, and Epiphyllums are likewise now opening in great beauty. A few years ago November saw almost the end of the greenhouse flowers of the year; now it is the beginning of a beautiful season in well-furnished greenhouses.

Finely-flowered Oncidium Rogersi.—A remarkably fine specimen of this beautiful autumn-flowering Oncidium is now in bloom in Dr. Ainsworth's collection at Manchester. It is growing on a block, and two spikes are produced from the one growth, one with 165 expanded flowers, and the other with 44. The lip is unusually fine, being 1½ in. across. This Oncidium needs no recommending; being both a free grower and bloomer, it should be in every collection.—W. C. Jr.

Locked Gates at Kew.—During a recent meeting held in reference to this subject at Richmond, the chairman read the following letter, which he had received from the First Commissioner of Works:—"Catmose, Oakham, Oct. 21, 1877.—My Dear Peek,—Thank you very much for your letter and the local papers you were good enough to forward, giving an account of the meetings which were held at Kew with reference to the question of opening the Gardens at an earlier hour. You may be sure it will always be my anxious desire to meet the wishes of the inhabitants of Richmond when it is possible, and when I can do so without detriment to the public service. The opening of Kew Gardens at an earlier hour would enormously increase the expense of their maintenance and materially interfere with the duties of the men employed; but the matter, you may rely upon it, shall be carefully considered. I think, perhaps, that on the Bank holidays some changes might be made, so that the public might have the enjoyment of the gardens for a longer time than at present; but, of course, I can at this moment give you no definite promise.—Believe me, yours very truly, Gerard Noel.' How the opening of the gates at an earlier hour would "enormously increase" the expense of the maintenance of the garden, it would be interesting to learn! In a garden where over £50,000 are spent on one hothouse, there are considerations as to the means required for opening the gates at reasonable hours. We repeat that many persons are prevented from using the Garden, especially in winter, when the darkness falls a few hours after the gates are open. To establish a national garden at a cost of over £22,000 a year, and then shut the gates on all the beauty and interest of the collection during the best hours of the day, is surely most unwise. The Gardens should be opened at the latest at 9 o'clock. The houses no one wishes to interfere with, as the passages are not free owing to the necessary work.

Dendrobium album.—This beautiful white Dendrobium is now in flower in Mr. Bull's collection at Chelsea. It has a rich and somewhat peculiar scent. There is also a fine variety of Lælia præstans in the same house.

An Ornamental-leaved Pear Tree.—The autumnal tints of the Doyenné Boussoch Pear are now rivalling those of the Virginian Creeper, and the excellence of this variety as regards size, flavour, and productiveness enhances its value as an ornamental tree. My only specimen grows on the Quince stock, and is trained to a wall with a western aspect.—B. S.

Vriesia brachystachya.—This is a very bright-flowering little plant allied to the Bilbergias. It is of easy culture, and flowers more freely than most of the older plants of the same family in cultivation. The inflorescence is bright scarlet and yellow, and the habit dwarf and neat. It is now in bloom in warm houses in some of the principal nurseries.

A beautiful Winter-flowering White Orchid.—A fine variety of Pilumna fragrans is now in flower in the Exotic Nursery, Chelsea. It is a white Orchid of remarkable beauty and peculiarly grateful odour, especially in the morning. Lovers of white flowers cannot dispense with it.

Sternbergia lutea.—It is surprising that this lovely autumn flower has not long ago become a frequent ornament of our gardens, instead of being confined almost to collections, nurseries, and botanic gardens, as at present. Its numerous rich green and graceful leaves of themselves recommend it. They grow about 1 ft. high, the beautiful clear yellow flowers growing about half that height, so that when the tufts are strong many of the flowers are half concealed among the leaves.

Salvia Bruanti.—This new kind reminds one of Salvia splendens as regards habit, but it has even more vividly-coloured flowers. With it is a curious species, unnamed, with the inflorescence variegated white and red.

Dendrobium bigibbum superbum.—This pretty Orchid in colour, and somewhat in shape, reminding one of a rich, lilac-coloured Primrose, is now blossoming in the Victoria Nurseries, where a goodly number of plants of it have been received from Torres Straits.

Sonerila Hendersoni.—This, though generally grown for the sake of its foliage, is one of the most beautiful of winter-flowering plants, its delicate mauve-coloured blossoms forming a striking contrast with the prettily-marbled leaves. It likes a warm, moist temperature.

Todea barbara.—A remarkable example of this Todea, which has been recently imported by Mr. B. S. Williams, is to be seen in fine health in his large conservatory at Holloway. Its trunk is about 5 ft. high, is triangular in form, and measures from 9 ft. to 10 ft. in circumference at the top. It has seventeen crowns, which are furnished with healthy green fronds measuring from 3 ft. to 5 ft. in length. The plant forms a striking feature in the conservatory, and would form a noble object in a rockery or some similar position.

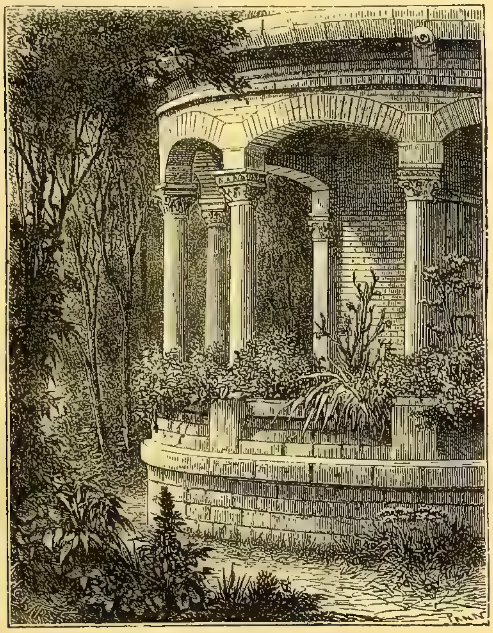
Orchids in Flower.—Among those now in flower at Messrs. Veitch's are Vanda cœrulea, Cattleya marginata and others, Oncidium ornithorhynchum, Masdevallias, Calanthes (including a remarkable and beautiful new hybrid not yet named), Pleiones, Colax jugosus, Pilumna fragrans, Cypripediums in great variety, Odontoglossums in variety, Dendrobium bigibbum, Burlingtonia fragrans, Oncidium crispum, and others.—N. S.

Primula capitata.—Seedling plants of this East Indian species, the produce of seed sent to Chiswick by Mr. Elwes, are now flowering there for the first time. It is, in its present youthful stage, a most charming Primrose, with foliage resembling that of P. farinosa, and scapes of flowers resembling those of P. denticulaa. The blossoms, are, however, of a deep lavender blue, much darker than those of P. denticulata, and their being produced at this time of the year renders them doubly attractive. It will be exhibited at South Kensington next Tuesday.—A. D.

THE FLOWER GARDEN.

FLOWERS ON WALLS.

There is a way of growing flowers on walls in various countries which deserves more attention than it has received with us. It consists of leaving the upper portion of a terrace or other wall hollow, and using this for flowers. The crest of the wall is, in fact, a narrow flower border; but though narrow, with a space for 2 ft. or 3 ft. of soil from 1 ft. to 2 ft. through, thus giving ample root-room for the production of a vigorous and graceful vegetation. The architect or builder can easily arrange for such wall-vases. The accompanying illustration shows the effects obtained in the slender wall of a small garden pavilion. We have often seen very charming effects produced in this way on the Continent, even in poor houses where little evidence of other beauty was to be seen. By adopting the principle of variety instead of repetition in such cases, a beautiful garden of flowers might be grown on the crest of many a barren wall near, or part of, a town house.



Flowers on Walls.

HARDY PLANTS AT EDINBURGH.

Hypericum ascyroides or orientalis is not included in the list of St. John's-worts given in The Garden (see p. 280). Nevertheless, this is one of the most distinct and pretty of the group, forming here a bush 3 ft. high, with numerous bright flowers 1 in. across. It is late in coming into flower. The anthers turn from yellow to white after the second day, and the blossoms are more like single yellow Banksian Roses, than those of a St. John's-wort. The foliage is delicate and useful for cutting, and when young, has a bronze tinge. At present (Oct. 31) our plant is covered with flowers. H. Androsæmum makes a famous bed. We have a reserve one for cutting from 12 ft. by 4 ft. At all stages, H. Androsæmum is of use and is ornamental; yearly there is a sod of seedlings around the bed, and these make the most equal bed to begin with; there are the bronzy young points in spring, and a profusion of flowers which are interesting, even when the yellow petals fall, as the young capsules in the centres of the starry calyxes are prominent and interesting. These increase in size and vary in colour the whole summer. At present, the bed is a mass of bunches of capsules of all ages, varying from green to red, brown, and black (when ripe) and always glossy. There are still flowers coming out, and the seed vessels remain on all winter. Thus, those of 1876 and 1877 are both represented now. A note is always made of this bed, but I have never seen any save our own; it is equally good in all weathers, every season, and is no trouble, forming of itself a good shape. The only other Hypericums that have ornamental capsules, that I am aware of, are H. asperum, H. grandulosa, and a Hypericum from Mr. Ellacombe, like H. Androsæmum, which I saw at Kew. This last is a native species; and has, however, the finest seed vessels.

Erigeron alpinus is at present in bloom for the second time, in fact, a stray flower can be got from it all the summer. In July its clear lilac flowers contrast well with those of the bright yellow Coreopsis lanceolata, and the two plants suit in height and also as regards Composite flowers. E. purpureus would make a useful, neat bed, inasmuch as it is in flower from May until severe frost sets in, and, like many kinds of Daisy, the old blossoms are nearly as good as the fresh ones; they are of a pinkish-lilac, and the plants grow in tufts, the flower-stalks being 12-in. high.

Lythrum alatum is another neat, erect-growing plant, which requires no stakes, and takes up but little room. The flowers, which are but sparingly produced, are bright magenta in colour; they begin to appear late in summer, and continue in succession until frost sets in. Still, the foliage and habit are so neat, and the red stalks so pleasing, that a bed of it mixed with white Phlox Drummondi, or a white Campanula of the height of C. carpatica or Hosti, would look well. This Lythrum stood out here last winter; we got it from Mr. Niven, who stated that it was hardy; certainly our soil and climate are superior to those of the Botanic Garden at Hull.

Polygonum Brunonis.—This keeps its bright pink flower-spikes very long, and when faded to rich brown they are no eyesore, but quite the contrary. P. vaccinifolium is at present a mass of flowers; a miniature of Brunonis, but far more attractive; as an edging, or to hang down from or over stones in a rock garden, it is admirable. In the Edinburgh Botanic Garden it is just now one of the principal plants that catch the eye in the form of fine, large patches.

Crocus speciosus and Colchicums.—Different sorts of these are flowering well, and we find that when supported amongst fine-foliaged plants, they do not get broken by wind and rain, as they otherwise would do. Pyrethrum Tchiatchewi, for instance, makes a pretty groundwork, with its very dark green, cut foliage, and white, Daisy-like flowers, for the single lilac Colchicum, and Saxifraga pentaphylla for the white variety of autumnale. Crocus speciosus does well associated with the double Matricaria Chamomilla. In planting this Crocus, one must make up one's mind never to get rid of it again in the spot in which it is placed. Trenching merely spreads it, and if too weakly to flower one year, it will appear in beauty three or four years afterwards. We have transplanted our original patch entirely three times, but the result is that we have three strong colonies, in spite of us, instead of one. Where planted in a bed on Grass, I observe this Crocus running into the turf. We shall be careful not to let the Grass-cutter go near the verge until the Crocus foliage fades. I fancy planting Colchicums and these naked Crocuses among low-growing plants is the best plan, as the flowers are supported by the foliage of the Saxifrages, Campanulas, and Pyrethrums, amongst which they may be planted; they certainly look much prettier amongst green herbage than on the bare soil; nor do I think this plan going against Nature, as, although devoid of their own foliage when in flower, they naturally grow in Grass and amid foliage, and support is thereby provided. Inveterate, as regards extension, as Crocus speciosus is, I doubt our ever seeing it as one does Colchicum autumnale abroad. Passing through Germany in autumn is a treat, and Colchicum flowers seem to be the principal ingredient in the fodder or Hay that is being scraped off the little patches of Grass land.

Rudbeckia Newmanni.—This has been a very gay bed—too staring, perhaps, for the taste of some, but we like bright flowers. To make up for its autumn flowering, blue-branching Larkspur is planted alternately in the same bed and pegged down. Its cut foliage lightened up that of the Rudbeckia, and it comes early into flower. When both plants are in bloom they look well, although this drenching August did not suit annuals.

Achillea tomentosa.—This is a most useful plant, growing, as it does, close and compact. It has bright yellow flowers, which are never an annoyance even when faded, although we regularly remove such as are past their best in order to ensure a constant succession of flower for six or seven months. One must step occasionally on the borders, and we use this and similar plants set at intervals apart as stepping-stones—a gentle kick in dry weather, or rain in wet, will put all to rights again. A. aurea is beautiful, but not so easily increased as tomentosa; it has long bright foliage, and clear yellow flowers; it grows about 1½ ft. high, and is beyond the stepping-stone line. A. Millefolium rosea is also good, but it is rather straggling in habit for choice borders. We grow many Achilleas; no weather injures them, and they are useful even when faded. The dwarfest which we have is A. tomentosa; the variegated form of the native A. Millefolium, which has a beautiful leaf, is the tallest; A. ægyptiaca, is 2½ ft. A. Ptarmica fl.-pl., a desirable variety, has double flowers, and is pure white. A. Clavennæ, which has hoary foliage, and which is a dwarf grower, we use as an edging alternately with another wild plant named Meum athamanticum. By cutting off the flower-shoots and a portion of its leaves we secure the beautiful feathery foliage of this Umbellifer during the whole season. Naturally after flowering it dies down, and the edging is gone. It is impossible to exhaust the countless hardy plants that crowd on one's memory, and possibly our borders—none of which can be cast out; all have much interest and beauty, and the variety is endless—that, perhaps, is the greatest charm of such plants. F. J. Hope.

Wardie Lodge.

PINKS OLD AND NEW.

About a century ago there was a Pink called Major's Lady Stoverdale, a kind raised from seed by a Mr. Major, who resided in the southern parts of England, and which that fine old florist, James Maddock, of Walworth, regarded as the first flower that deserved to be classed among such as are now held by florists in esteem. It was the first Pink possessed of that irregular and beautiful ornament called lacing, which is a continuation of the colour of the eye, round the white or broad part of the petal, and which gives the flower such an elegant and attractive appearance. About the same time, or soon after, a laced Pink named Duchess of Lancaster was raised in Kent; and another highly-esteemed laced variety was Green's Queen. This change in character, which added so much beauty to the Pink, gave the first impetus as regards its better cultivation. Mr. Thomas Davey, of the King's Road, Chelsea, an enthusiastic admirer of the Pink, introduced an improved class of flowers, which were distributed under the name of rose-leaved Pinks, and consisted of such varieties as Davey's Queen, Davey's Duchess of Devonshire, and Eclipse, flowers which were highly thought of at the time, and which were followed by several other raisers' productions of equal merit, for the cultivation of the flower was by no means confined to London; on the contrary, it spread with great rapidity all over the country, and from the years 1830 to 1850 the Pink was one of the most popular of florists' flowers. About 1850 Maclean's Criterion, Maclean's Narborough Buck, Turner's Nonpareil, Fellowes' Optima, Hale's Queen of England, Kirtland's Prince Albert, Keynes' Magnificent, Looker's Lord Norry's, &c., were regarded as the leading flowers, and were much prized for exhibition purposes. The Pink, as is tolerably well known, is a thoroughly hardy plant, and the invariable practice is to plant it out at the end of September, and at any time during October, to stand the winter. The usual practice is to plant in beds raised from 6 in. to 9 in. above the ordinary level of the ground, in order to escape any excess of moisture during winter. In order to have good laced blooms the soil must be rich. A good yellow loam of a fibry nature, some well-decomposed manure, leaf-mould, and rough river sand make an excellent compost, which should be well mixed and spread on the surface of the bed after the subsoil has been well loosened and broken to pieces. The bed should be made up in August, and kept forked over until planting time has arrived, in order to thoroughly mix the materials and sweeten them.

Some plant threes and some pairs, but in both cases they should be from 12 in. to 18 in. apart, according to the robustness of the plants. It is a good plan to pot some of the earliest-rooted pipings, in order to get the roots well established in the soil before planting out; but if the plants be carefully lifted from the piping-beds, with some soil adhering to the roots, they can scarcely receive a check, especially if a little light sandy soil be thrown among the roots to give them a start. Weakly stock of scarce or valuable kinds may be potted as the surest mode of preserving them through the winter. If the weather be dry at the time of planting, a good watering may be given. One great advantage in planting about the end of September is that time is afforded for the plants to get well rooted into the soil before winter sets in, so that they are seldom thrown out by the frost. If frost loosen the plants, or they are displaced by the action of worms, a gentle pressing into the soil will soon set them right. During autumn, the surface of the bed should be stirred, to loosen the soil rendered close by rain; and if the bed sinks, as will sometimes happen, some fresh soil should be added as a top-dressing. Early in January the plants will be greatly benefited by a mulching of horse-droppings and rotten leaves, placed over the bed to the depth of 1 in., and, at the same time, a few sprays of Spruce Fir should be stuck in between the rows of plants, which, standing as a kind of fence a little above them, protects them from the cutting winds and hoar frosts of January, February, and March. This protection is much more necessary in the north than in the south. In April, when the plants begin to break into growth, the sprays of Fir may be removed.

As regards varieties, the following will be found to be a good selection, viz.:—Annie (Maclean), Annie Chater (Hooper), Attraction (Maclean), Bertram (Turner), Blondin (Turner), Charles Turner (Maclean), Constance (Maclean), Diadem (Turner), Dr. Masters (Turner), Edwin (Turner), Excellent (Turner), Godfrey (Turner), John Ball (Maclean), Lady Craven (Hooper), Lord Kirkaldie (Turner), Minnie (Turner), Mary (Auckland), Picturata (Turner), Princess of Wales (Turner), Rev. George Jeans (Kirtland), Shirley Hibberd (Turner), Superb (Turner), and Victory (Hooper). D.

Large Grass Isolated in Turf.—Some of the more vigorous hardy Grasses are well suited for isolated planting or in association with groups of fine-leaved hardy plants. They afford graceful effects from their foliage alone, and long before the period of flowering. Among the kinds of Grasses desirable from the grace and vigour of their foliage apart from their flowers, which are nearly always beautiful, may be named Arundo conspicua, A. Donax, A. D. versicolor, Bambusa in var., Elymus arenarius, E. condensatus, Erianthus Ravennæ, Gynerium argenteum and its varieties, Poa fertilis, Saccharum ægyptiacum, S. cylindricum, S. Maddeni, Zea Mays, Andropogon argenteus, A. formosus, A. Sorghum, A. squarrosus, Gymnothrix latifolia, Holcus saccharatus, Erianthus violascens, Panicum bulbosum, P. altissimum, P. virgatum, P. maximum, Sorghum halepense, and Pennisetum longistylum.

Late-blooming Antirrhinums.—Plants of these hardy biennials in a large bed, cut over a few weeks ago in order to secure a crop of seed, have now thrown up large numbers of side shoots, and are yielding an abundance of richly-coloured flowers. How useful these are at a time when there is little else in bloom out-of-doors those can best estimate who have to find flowers somehow, and who are only too glad to have any useful plant from which to cut. The plants in the bed in question are from seeds sown indoors early in spring, the seedling plants being pricked out into boxes until strong enough to be planted out in rows in the open ground. These dwarf kinds produce a much larger proportion of striped and fancy-coloured flowers than is usually found in the tall strains, and the bed, when in full bloom, was indeed worthy of admiration. What a beautiful mass of bloom may in this way be had at the cost of a few pence for a packet of seed, and, if merely wanted for cutting, the plants might be grown in any out-of-the-way place for that purpose.—A. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

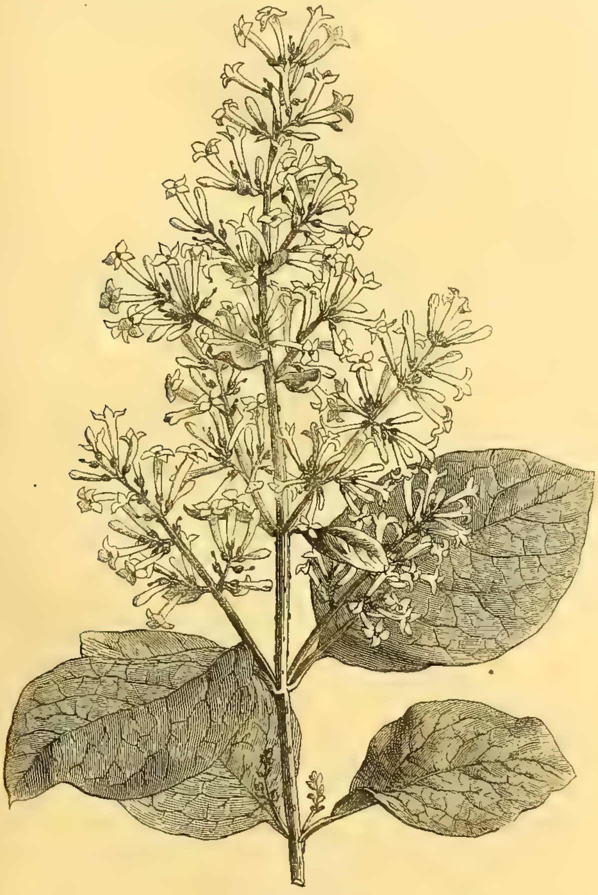
White Siberian Squill.—"R. M.," mentions (see p. 388) with honour a white variety of Scilla sibirica. Will he tell us where he found it? The white variety of S. bifolia is not unfrequent, but I never saw, or met with anybody who had seen a white S. sibirica. I have looked for it in vain for years.—H Harpur Crewe.

Double Colchicums.—How very fine in comparison with the single forms are the double Colchicums, especially the striped kind, which produces flowers of great substance. One just gathered I find to possess fifty petals, and they bloom quite as freely as the single varieties. These and the smaller kinds of autumn Crocuses are far too seldom met with in gardens. Patches of these naked autumn flowers should have a surface clothing of some of the dwarf Sedums, such as Lydium or glaucum; and, when grown in pots, Selaginella denticulata would form a good base for them.—A. D.

THE HIMALAYAN LILAC.

(SYRINGA EMODI).

This shrub, which flowers in July and August, is frequently named Syringa indica, and Royle, in his "Illustrations of the Himalaya Mountains," erroneously represents it as having purple flowers, whereas they are white. It forms a robust, dense bush from 6 ft. to 10 ft. high, with oblong-elliptic leaves, sometimes 8 in. or 10 in. long, deep green above, glaucous beneath, tapering much to the base, pointed, on long foot-stalks, and quite smooth. The flowers are arranged in rather large terminal thyrsoid panicles, and have rather a disagreeable odour. The fruit or capsules are somewhat large and almost cylindrical, and the shoots are spotted with white.



Syringa Emodi.

George Gordon.

Brambles.—There is a fine collection of the British and other Rubi in a living state in the Cambridge Botanic Garden, grouped happily in a large bed, or rather plot. Such culture is legitimate work for a botanic garden. Mr. Mudd propagates these Rubi by taking off the extreme points of the shoots and inserting them upside down in pots.

New Forests in France.—It is stated that several million acres being unproductive in France for farming purposes, the proprietors are taking measures to grow forests on these lands. It is estimated that in that country of high prices of timber, the lands will thus net 10s. per acre per annum in profit, and that there are enough of such lands in France to give an increase in productive profit of £5,000,000!

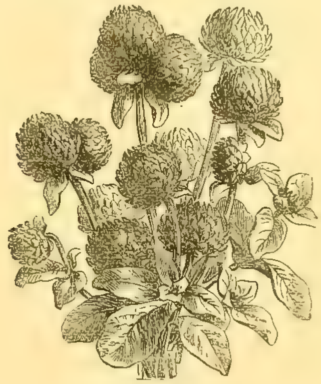
Ephedras at Cambridge.—These plants, usually found only in botanic gardens, are not without beauty when well grown, and seem to be quite hardy. A little group of them in the Cambridge Garden is at present very graceful; they grow from 2 ft. to 4 ft. at Cambridge, and somewhat resemble Conifers in habit.

The Late Gale.—We are told that by the recent gale many trees were blown down in Kelston Park, and that amongst them was one which had been planted by Queen Anne. Five hundred trees at Badminton, and 300 at Dyrham Park were also blown down.

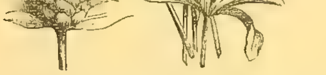
THE INDOOR GARDEN.

THE GOMPHRENAS, OR GLOBE AMARANTUSES.

These pretty and easily-cultivated stove or greenhouse plants —for they are either or both—have somehow dropped very much out of cultivation of late years, though they are among the most useful plants we possess for decorative purposes. The more popular varieties are those of the globosa and pulchella sections, which are annuals. The character of the flowers which they bear will be apparent from the annexed illustrations. Their colours are bright red, rose, and white. Some of the South American varieties, such as G. perennis, are herbaceous plants, and this sort introduces a pale yellow colour into the genus, of which G. villosa is an evergreen shrub, with striped blossoms. The whole of the flowers of the Gomphrenas are not only ornamental while living, but almost equally showy when dead—and there are few dried flowers more useful and showy with which to form bouquets, along with other Everlastings and dried Grasses, than those of the Gomphrenas. Their colour, in comparison with those of most other dried flowers, may be said to be fast. To grow the annual Gomphrenas well they should be treated very much in the same way as Celosias; that is, sown in a hot bed. The soil, however, should be light, and the drainage perfect, as the young plants are far more liable to damp off than those of either the pointed or crested Cockscomb. The seeds are also of quite a different character, and require a deeper covering of earth. The surface of the pots should be placed near the glass, in order to prevent the young plants from being drawn up weakly. If a hot bed be not available, a shelf near the glass in a plant stove, intermediate house, or a Vinery at "work" is a suitable place in which to sow the seeds. As soon as they are fairly up the young plants should be pricked off, three or so around the side of a 3-in. pot. If at this stage the pots can be plunged in a bottom heat of 60° or so, the plants will be all the better for such nurturing. They will, however, succeed if placed on a shelf near the glass, and slightly shaded from the noon-day sun until they have become quite re-established. From the first it is very important to guard against drawing up the plants in a spindly manner. The tendency of



Gomphrena globosa.



Gomphrena Hoveyana.

Gomphrenas is to rise rather than spread, unless kept compact by full exposure to light from the first; they look best from 1 ft. to 18 in. high, and about 9 in. through. As soon as the plants have become well rooted they should be potted off singly into 3 in. pots, and treated as before. When these are filled with roots shift them into the size in which they are to flower, 6 in., or, at the most, 8 in. pots; 6 in. is the best size, unless special and forcing culture be adopted. Gomphrenas look best in the form of single specimens and in small pots, and good plants of them for narrow shelves may be grown even in 4 in. pots. For such plants the soil must be light. A compost consisting of equal parts loam and leaf-mould, with a sixth of silver-sand added, suits them admirably; 1 in. at least of drainage is needed in a 6-in. pot, and over the drainage a few pieces of rough leaf-mould will be found useful. In potting care must be taken not to bury any portion of the stems of the plants. In the case of Celosias and Balsams, the practice of burying part of the stem is a handy method of at once securing a more compact habit, and, at the same time, increasing the number and vigour of the roots. But this ruins Gomphrenas, as, sooner or later, it causes them to rot off. If Gomphrenas be grown in proper quarters and skilfully cultivated, they require no training; it is a useful plan, however, to nip off the first blossoms that show themselves on the tips of the stronger shoots, and it may also be desirable at times to stop a few of the stronger branchlets, or any that may get much ahead of the others. When fully grown and coming into flower they may be placed in the conservatory, in which they will do well if neither overwatered nor placed in a cutting draught. A cool stove, however, or intermediate-house suits the Globe Amarantuses best; in tolerably warm quarters the colour is brighter than it otherwise would be, and the plants continue to produce a longer succession of bloom. The Gomphrenas succeed well in sitting-rooms, in window gardens, and in other positions indoors, and the red and rose-coloured varieties, well grown and flowered, form chaste material for the decoration of the dinner-table.

To preserve the flowers in a dry state in good condition for the longest period of time, it is important to cut them with a good length of stalk just before the flowers are fully expanded; the stems will then retain their stiffness and the flowers their form and colour. Slow drying in the shade is the best and surest preparation for perfect keeping afterwards. One sometimes sees heaps of Gomphrenas and other so-called Everlasting flowers lying on shelves and stages to dry like cut Grass in swathe in a Hay-field. But those who collect and dry Grasses for ornament adopt a widely different method. There are few better modes of drying Gomphrenas than gathering them in small, loose handfuls, with, as I have said, as long stalks as is practicable, and placing them in small empty jars or pots, setting them in a shady part of the kitchen or other dry room until fully harvested.

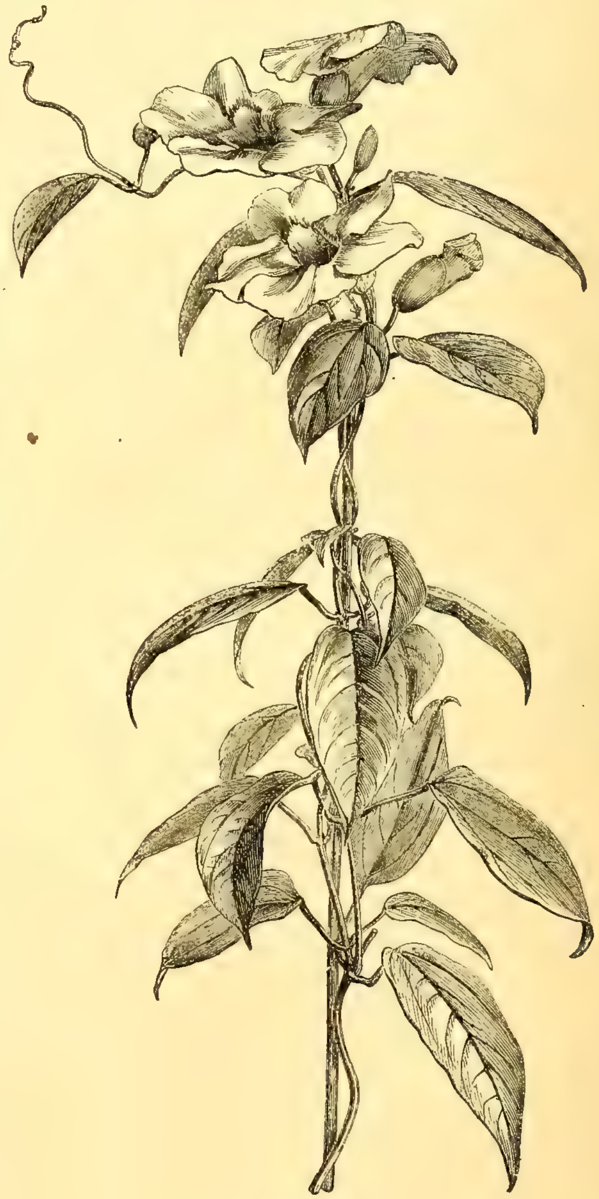
Gomphrenas may be sown at any time from January to July; the most common months for sowing them are March and April. It is, however, a good and useful practice to make a late sowing in June, as if plants the result of this sowing be well managed they will be found most useful for enlivening the warm conservatory or cool plant stove during the two most flowerless months in the year—October and November.

D. T. F.

Standard Pelargoniums.—Where these are desired, few kinds will be found better adapted for the purpose than the double-flowered Ivy-leaved varieties which have been lately introduced; they may be grafted on strong-growing scarlet kinds, seedlings being the best. The stocks should have a clean stem, which is easily obtained by removing the lower leaves until they reach the desired height; then in spring a piece of the kind to be grafted should be taken off with a heel, then with a sharp knife make an incision about 6 in. from the top of the stock, and large enough to admit the scion. Tie tightly with matting, so that the external surfaces come into contact, and there need be little fear about their becoming united. A few leaves should be left at the top of the stock to draw up the sap, but when the graft has taken fairly they may be removed gradually, ultimately cutting the stock off down to the graft. By putting four or five good branchy pieces of any of the Ivy-leaved varieties on to one stock good plants may soon be obtained; as they grow they naturally assume a drooping habit, and when in flower are very effective. Mr. Kingsbury, of Southampton, grows them successfully in this way, and finds them useful for decorative purposes of many kinds.—S.

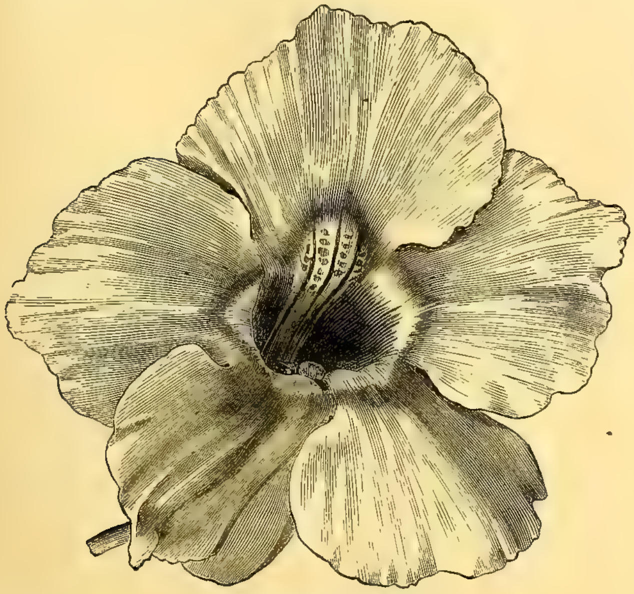
THUNBERGIA LAURIFOLIA.

This strong-growing stove climber, from Malacca, bears, through the summer and autumn, quantities of pale blue, or rather lilac-coloured, tubular flowers, that spread considerably at the mouth, and that are produced freely from the points of the young shoots. Its foliage is ample and bright green in colour. It thrives well in either peat or loam, with which has been incorporated a good sprinkling of sand; the latter is essential to success, as, from its free habit of growth, the plant needs a plentiful supply of water. It is better grown in a pot than planted out, as when its roots are allowed too much space it becomes unmanageable. It is better suited for a stove of considerable size, where it can be trained loosely under the roof, than a small house, as in the latter it has not room to exhibit its true character. After it has ceased to flower in the



Thunbergia laurifolia.

autumn, it should be cut in freely, and kept much drier at the root than when in active growth; but it should never be allowed to get too cold, even when at rest, or it will most likely die. It strikes freely from cuttings made of the half-ripened wood in summer, or in spring from young shoots about 6 in. in length, taken off with a heel, and inserted in small pots in sandy soil; they should be covered with a bell-glass, shaded, and kept moist until they have formed roots, when they should be gradually inured to the air and given more pot-room as required. So quickly does it grow that cuttings of it struck during the spring and grown on without stint of root-room, will cover a large space the ensuing year. It should be kept well syringed overhead during the growing season, in order to keep in check red spider, to which it is somewhat liable if the atmosphere be too dry. B.



Flower of Thunbergia laurifolia.

Seedling Gloxinias.—Like W. W., Eaglehurst, I find these to make the best of flowering plants for rooms or for table decorations. I sowed two small packets of seed on February 20, and when the plants were large enough to handle I had 230 dibbled into small pots, and put on a front stage in an early Vinery, potting them on as they required it into 5 in. pots. The best plants commenced flowering the first week in July, on the 14th of July I had sixty in flower, and every one quite distinct. Some of the plants measured 20 in. across, and some of the flowers 4 in., and since that date I have not been without Gloxinia blossoms. Early in September I moved eighty plants into the stove, twenty of which are now flowering, and the remainder will come in in succession so as to keep up a supply till December.—W. W. Parker, *Broad Oak, Accrington.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Panicum plicatum Self-sown.—This handsome, broad-leaved, and large Grass grows freely alongside the pathways and under the benches in the warm houses at the Cambridge Botanic Garden. It is very graceful and luxuriant thus grown, and, moreover, useful for cutting.

Finely-bloomed Lapageria rosea.—About the middle of September this beautiful climber produced in our conservatory 900 blooms. The border in which it is planted is 3 ft. long and 1 ft. wide, and the top covers 81 square ft.—A. S., *Wellington.*

Bougainvillea glabra in Autumn.—This often undervalued species is of great use at this season, when it blooms profusely under good treatment, and proves very useful for cutting in late autumn. It is best planted out in a warm house, and freely trained over the roof.—H.

Melaleuca rigida.—It will be a good thing for indoor gardens when plants are trained in a picturesque or graceful manner, instead of in the usual rigid and monotonous style. So we thought the other day when looking at a plant of Melaleuca rigida in a cool house in the Cambridge Botanic Garden. It is gracefully pendent and weeping in habit, and very dense in growth.

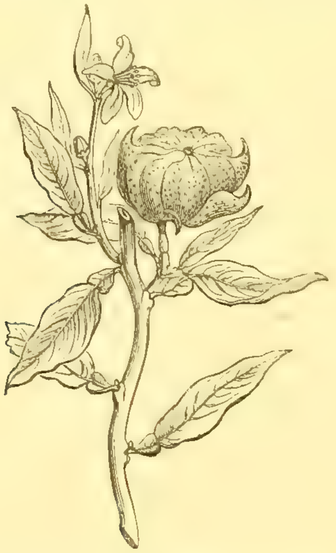
SOME USEFUL AND PECULIAR VARIETIES OF THE GENUS CITRUS.

There are few genera of plants to which so much attention has been given, and so much written upon, as the genus Citrus, not on account of its being rich in species, for only five are contained in it, but rather on account of the extraordinary abundance of varieties, the interest and peculiarity in the forms of some of the fruits, their importance as an article of consumption, not only in Europe, but also in various parts of the world, and their ornamental character as conservatory plants. The Orange is certainly one of the most attractive and striking of fruit-bearing trees; whether in flower, fruit, or only for the foliage it is worth cultivating. Large plants group well in large collections, and the smaller pot plants are always attractive, on account of their shining green foliage. The strong perfume of the flowers is also another feature in these plants. Regarding the early history of the Orange a good deal rests upon what is the true and original form whence sprung our numerous cultivated varieties; all those included as Bitter and Sweet Oranges are referred by some botanists to Citrus vulgaris (Risso) a native of Northern India; indeed, it is supposed that a wild form which occurs in Gurhwal, Sikkim, and Khasia, is the origin of all our cultivated forms. It has further been considered that the Citron, Lemon, Lime, and Shaddock, and even the Orange, are all referable to a species indigenous also to the forests of Northern India, in the valleys of Kumaon and Sikkim, and perhaps specifically identical with Citrus medica (Risso). Upon the hypothesis of this being the original form of the now widely-cultivated Orange, we learn from Theophrastus that it was plentiful in Northern Persia, and cultivated by the Jews in Syria during the Roman dominion. Though it seems that the fruits found their way into Rome at a period anterior to the Christian era, the tree appears not to have been successfully cultivated in Italy till some time in the third or fourth century. However widely diffused the plant may have been in Western Asia, recent travellers have not found it in a wild state in Persia. In China it is cultivated, having no doubt been introduced from an early period. At the present time the growth of the Orange extends over all warm countries, and it is cultivated successfully in several of our colonies. In America it yields most abundant returns.

Having said so much on the early history of the Orange, we shall purposely refrain from any remarks on its subsequent cultivation in England, this matter having been so ably treated by the Rev. H. N. Ellacombe in his excellent papers on the "Plant-lore of Shakespeare" (see The Garden, vol. xi., p. 525). On the literature of the Orange much might also be said, numerous works, some of a most elaborate nature, having been prepared on the subject, the principal of which have been the work of foreign authors, notably amongst these being Risso's "Histoire Naturelle des Oranges," a splendidly-illustrated work published in Paris in 1818, with life-size figures of over 100 kinds. Besides the many varieties of Orange known in commerce there are numerous forms grown which are never so seen, and the same may be said with regard to the Lemon. In considering some of the varieties of the genus Citrus we think it best to disregard any previous arrangement that has been made in classifying the different kinds, and to review them more in the sequence by which they are usually placed in the popular mind. Thus the first to claim attention will be the

Orange (Citrus vulgaris—Risso).—Under this head may be placed both the Sweet and the Bitter Orange. By those who do not so class them, however, the former is often referred to C. Aurantium (Risso), and the latter to C. Bigaradia (Duhamel). The Sweet Orange has ovate, oblong, acute leaves, the edges somewhat serrated, and the stalk with larger or smaller wings, the presence of which is a characteristic mark of the genus. The white, fragrant flowers are too well known to need any description. The principal difference in the numerous varieties described is in the form of the fruit; thus we have the ordinary Sweet, or St. Michael's Orange, with its somewhat small, golden-yellow fruit, with a smooth but thick skin enclosing a sweet, rich, yellow pulp, divided into from nine to eleven cells, and containing roundish seeds. This is one of the most extensively cultivated varieties, on account of its great productiveness. The tree is said, however, not to come into full bearing until it attains the age of twenty-five or thirty years. The Blood or Malta Orange has a fruit which is round, somewhat rough, and very thin-skinned, and as it ripens becomes of a reddish-yellow colour, the pulp itself being tinged with red, which deepens as the fruit matures. It is from this fact that its name is derived. This variety has very few seeds, which are barren; it is a choice variety, the pulp being very sweet and juicy. Another choice variety is the Mandarin Orange; this bears a small fruit, somewhat flattened, with a very thin rind, which separates from the pulp as the fruit ripens, and when fully ripe hangs loosely around it; it is of a very rich and sweet flavour. This variety is extensively grown in China, where the fruits are much prized as presents to the Mandarins. It has been introduced in comparatively recent years into Malta and St. Michael's. The Mandarin Orange was at one time considered a distinct species under the name of C. nobilis (Lour). It seems, however, to be simply a variety of the common Orange, as is also the Tangerine, which produces small, somewhat flattened fruit, with a thin rind, and a sweet, delicious, fragrant pulp.

These are the principal or choicest varieties of the Orange known in the markets. There are numerous other varieties described, the fruits of which vary, some being more or less round or compressed, rough or smooth-skinned, and some even ribbed, horned, or variously deformed; these varieties, however, are seldom cultivated. The Oranges usually sold in the streets or in the shops in the poorer neighbourhoods of our large towns, are mostly the produce of inferior kinds, with thick, often warted rinds, and tough, woolly, juiceless pulp. Amongst Bitter Oranges, the most important, either in a commercial point of view, or on account of the peculiarity of their fruits, are the following;—The common Bitter or Seville Orange (the *Bigaradier* of the French), a fruit with a thick rind, and a rugged, uneven surface of a reddish-orange colour; the rind, flowers, and leaves are more distinctly aromatic than those of the Sweet Orange, and the pulp has an acid, bitter taste. It is the fruit of this variety that is used for making Marmalade, and the peel is used for candying and making medicinal tinctures. The rind is removed from the ripe fruit in long, spiral strips by a sharp knife: if removed without the white under-skin it is the more valuable. Besides the peel removed from the fresh fruits after arrival in this country, it is also imported in considerable quantities, especially from Malta. The foreign dried peel is not so valuable as that removed in this country. The tree is of a small size, and is extensively cultivated in the warmer parts of the Mediterranean region, more particularly in Spain. This variety and the Chinese Bitter Orange, or Chinois (the *Bigaradier Chinois* of the French), are perhaps the only two cultivated purposely for the fruits. This latter has a thick rind; the fruit is small and spherical, and is often preserved in syrup. Many of the fruits, however, of the Bitter Oranges are very singular in form, notably the Horned variety (*Bigaradier à fruit corniculé*). As will be seen by our figure, the fruit is large, somewhat flattened, and ribbed, covered with a thick, wrinkled rind, some of the carpels being prolonged with horn-like or clawed appendages. This variety grows into a good-sized tree, and is cultivated in the south of Europe as much for the sake of its fragrant flowers as for the fruits, which were at one time, and may be still, used for flavouring or seasoning meat. A double-flowered variety, the *Bigaradier à fleur double* of the French, comes nearest perhaps to the Horned variety, resembling it in the form and size of the tree; the fruit varies in form, but is mostly double, containing, so to speak, one within another; the flowers are gathered for the sake of their perfume. Another variety, *Bigaradier Violette*, bears leaves and flowers of two different colours on the same plant, some being of a violet hue, and the others of the ordinary colour; the fruits also in an immature state have a violet tinge. One pretty little form never attains a greater size than that of a small shrub. The leaves are pointed, of a fine green colour, somewhat resembling those of the Myrtle; the flowers are small, white, racemose, bearing numerous blossoms on the same peduncle; the fruit is not unlike that of the Chinois, but is somewhat smaller.



Horned Orange (Citrus vulgaris—Risso, var.).

Lemon (Citrus Limonum—Risso; C. medica var. of some authors).—Of the Lemon a very large number of varieties are known even in cultivation in this country. In all, however, the fruits contain a very acid pulp, distinct from any other species or variety of the genus. A very large-fruited variety is described by Brown as having been introduced and much cultivated in Jamaica, from a single fruit of which a pint of juice has been obtained. The common Lemon is a tree from 10 ft. to 15 ft. high, frequently seen in gardens in many sub-tropical countries, but specially cultivated as an article of commerce on the coast of the Mediterranean between Nice and Genoa, as well as in Sicily, Calabria, Spain, and Portugal. As seen in cultivation, the Lemon, unlike the Orange, is of irregular growth, with sparse foliage. The flowers are partly hermaphrodite, and partly unisexual, and the corolla is purplish on the outside and white within. Their fragrance is more delicate than, and not so clinging as, that of the Orange. The trees blossom during a great part of the year except the actual winter. The fruit of the ordinary Lemon is too well known to need any description, and the uses are also familiar to all. The Lemon assumes many peculiar forms: thus, the Fingered Lemon of China is amongst the most singular. This fruit grows to a large size and is almost solid, with little or no pulp; at the apex of the fruit the segments become absolutely divided into five or more long, cylindrical lobes: hence the name of Fingered Lemon or Citron. Such singular shapes, however, do the fruits of the different varieties of Lemon assume, that there seems to be no limit to their probable multiplication. Amongst those noted for their free-flowering and abundant fruiting is the Clustered Lime or Lemon (*Limonier à grappes* of the French). The leaves of this variety are oval-oblong, and the flowers, which are borne in corymbs, are succeeded by clusters of roundish-oblong fruits often somewhat warted on the surface, the rind being thick and shining, and the pulp very acid, and containing only few seeds. This variety produces fruit abundantly during a great part of the year, and is cultivated largely in Southern Europe. It is well shown in the accompanying figure (see p. 423).

Citron (Citrus Medica (Risso) Cedrat of the French).—As stated at the commencement of this paper, this species is now usually retained as the origin of all the fruits previously considered. It has always been applied to the Citron, and in the present state of our knowledge is still specially applicable. The Citron occurs in fewer varieties than either the Orange or the Lemon. The most common is the large Citron (*Cedratier a gros fruits*), of which we give a figure (see p. 423). In this the leaves are thick, oval, oblong, and of a glaucous green, and the flowers are large and white, and very numerous; the fruit also is very large, covered with a very thick, irregular, or wrinkled rind, at first of a reddish-purple colour, becoming green as the fruit enlarges, and finally changing to a coppery hue. It is for its thick rind that the Citron is valued, for the purpose of candying or preserving in sugar for use in confectionery; for this purpose the peel is salted, and shipped in this state both to England and Holland. The fruits themselves, which often weigh several pounds, are seldom eaten raw. Though several varieties have been known in cultivation in this country, they have been known only very rarely to ripen their fruits. According to Fluckiger & Hanbury's "Pharmacographia," the Citron appears at the present day to be nowhere cultivated extensively, the more prolific Lemon tree having generally taken its place. It is, however, scattered along the Western Riviera, and is also grown on a small scale about Pizzo and Paola, on the western coast of Calabria, in Sicily, Corsica, and the Azores.

Clustered Lime or Lemon (Citrus Limonum—Risso, var.).

Large Citron (Citrus Medica—Risso).

Bergamot (Bergamottier of the French).—Citrus Bergamia of some authors, though modern botanists consider it not sufficiently marked to make it a distinct species from those preceding. It is a small tree, in flowers and foliage not unlike the Bitter Orange; the fruits are nearly spherical or somewhat Pear-shaped, very often crowned at the apex by the persistent style; they have a smooth, thin skin, of a pale yellow colour, and this skin contains a large quantity of essential oil, of a peculiar but well-known fragrance. It is for this oil (the oil of Bergamot of the shops) that this variety is valued, being cultivated on low grounds near the sea at and in the neighbourhood of Reggio, in Calabria, where Lemon and Orange trees are often mixed with it, and the ground beneath their shade well cropped with vegetables. The essential oil is expressed from the fruits by specially-constructed machinery, by which the fruits are made to revolve in a kind of dish or saucer, at the same time coming in contact with a series of metal ridges, which fracture the rind and thus set free the oil. From 2 oz. to 3 oz. of this oil is so obtained from every 100 fruits, and about 7000 fruits are thus treated by a single machine in one day. After the oil has been extracted the fruits are again pressed for the sake of the acid juice contained in the pulp, which is concentrated and used in the manufacture of citric acid, and the residue, after the final extraction of oil and juice, is used as a cattle food. The oil is always known in commerce as essence of Bergamot, and is imported chiefly from Messina and Palermo. Its principal use is in perfumery. Like all other fruits of the Orange tribe that we have described, the Bergamot has its varieties with fruits of singular formation. One, for instance, in which the fruit is flattened to where there is a circular opening, discloses a number of irregular prominences. On cutting one of these fruits across a series of about twenty cells filled with pulp are seen around the circumference, and in the centre a number of irregular cells agreeing with the external prominences. Of the Lime, usually described as Citrus Limetta (Risso), and of the Shaddock (Citrus decumana, L.), we need say but little, as they are so well known. Of the former, several varieties are cultivated. The chief use of the Lime is for the juice, which has a great reputation as an antiscorbutic. The fruits of the Shaddock are known under distinct names according to their size; thus a full-grown fruit is very large and weighs from 10 lb. to 20lb.; they are then called Pompelmousses or Pampelmousses, while those of the smallest size are known as Forbidden Fruit or Pomeloes. Of the remaining species of the genus Citron we have little or nothing to do, as their fruits are of little importance economically, nor are they of interest structurally; one exception, however, we must make, and that is to Citrus japonica, (Hib.), a native of Japan, the fruits of which are about the size of a large Cherry and quite spherical, with a thin rind, and a very sweet, agreeable pulp. It is known as the Kumquat, and the fruits preserved in syrup are often to be obtained at the best Italian warehouses at the west-end of London. The plant is in cultivation in this country, and has produced fruit with us.

John R. Jackson.

VINE DISEASES.

Spot.—In some cases this appears to be constitutional, or at all events some varieties of Grapes are much more subject to this evil than others. It may be noted that where it is regarded as "constitutional," the connection between the affected parts and the seeds and axis of the berry may be traced. In other cases it is more superficial, and apparently accidental, or the result of bad health. It is sudden in its action, and sometimes very injurious. Muscats are perhaps more subject to spot than any other class of Grapes. On its first appearance, which is when the Grapes are young, tender, and swelling fast, a small irregular, whitish mark is seen on the side of the berry, as if it had been bruised in some way; the pulp beneath dries up, and a sort of contraction occurs, the berry soon assuming a one-sided, irregular form. In cases where the berries are much affected, they should be cut out. As to the cause, it is at times difficult thoroughly to ascertain its origin.

Scalding.—This is a term applied to Grapes which appear as if they had been scalded. It generally occurs when the berries are about half-grown; sometimes it is but a few berries here and there which are affected, but frequently the entire side of the bunch is damaged, and we have seen cases of nearly the entire crop being lost, the berries being completely destroyed, as if scalded or parboiled. This is caused through late or imperfect ventilation on some bright, sunshiny morning, whilst the internal atmosphere and even the berries are saturated with moisture. The varieties most subject to this affection are Muscat of Alexandria and Lady Downe's Seedling.

Warts on the Leaves.—These are merely small green warts that form on the backs of the leaves, a sort of granulation or extravasation of sap through the skin of the leaf. They are injurious to the leaves, no doubt, as affecting respiration, &c., and are the outcome of some fit of ill-health on the part of the Vine. This affection may be caused by a too close, warm atmosphere saturated with moisture. Vines badly affected take a long time to recover.—"Florist."

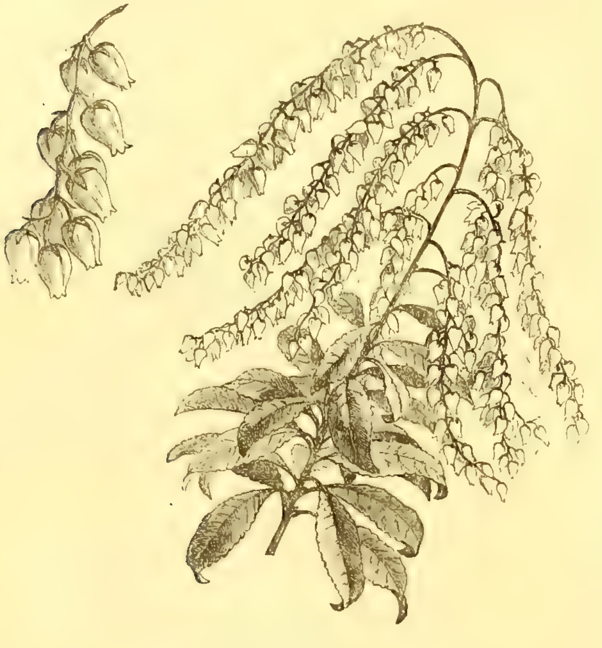
PLATE XCVIII.

THE JAPANESE ANDROMEDA.

(PIERIS JAPONICA.)

Drawn by Miss DUFFIELD.

AMONG the groups of plants which deserve to be more extensively employed in our gardens and shrubberies than is now the case, the Heath tribe (Ericaceæ) holds a prominent position. We are, indeed, in no danger of losing sight of this beautiful family so long as Rhododendrons hold their own in the shrubbery and Azaleas are conspicuous in the greenhouse, but a much greater variety might easily be presented than is at present the case. One of the most beautiful shrubbery beds at Kew is that devoted to plants of the Heath tribe; this is situated in the pleasure grounds, just outside the wire fence, on the left hand of the Syon vista, and is well worth a visit at various seasons of the year—in early summer on account of the glowing colours of the hardy American Azaleas, and in late autumn for the various white-flowered Clethras and allied plants, which are then specially attractive; the St. Dabeoc's Heath (Dabœcia polifolia), too, is then very ornamental, flowering late on into the winter.



Flowering branch of Pieris (Andromeda) japonica.

Among these Ericaceous shrubs, various species, which are popularly known as Andromedas, take a prominent position. The most recent authorities, however, restrict this name to the pretty little pink-flowered shrub (A. polifolia) which is familiar to those who wander on the turfy moors of our more northern counties, and which is found in similar localities throughout the temperate and sub-arctic regions of the northern hemisphere. The white-flowered species are by Bentham and Hooker distributed among various allied genera, all of which are worthy of attention, as including handsome and desirable garden plants. Many of them are placed in Pieris, a genus established by Don for three or four of them, including two of those which are about to be noticed. As now defined, Pieris includes ten species of smooth or pubescent trees or shrubs, with slender branches, and alternate stalked, entire, or serrulate evergreen leaves; the short-stalked white (or rarely red) flowers are disposed in short or elongated axillary or terminal racemes. These species are natives of the Himalayan region, the Malayan Peninsula, Japan, and eastern North America; they are distributed into sections, the subject of our plate with two others forming the section Portuna. The characters distinguishing the sections are mainly technical; but the three species agree in having leathery serrated leaves, and white flowers in simple racemes, which are axillary or panicled at the ends of the branches. The following descriptions will assist in the discrimination of the species.

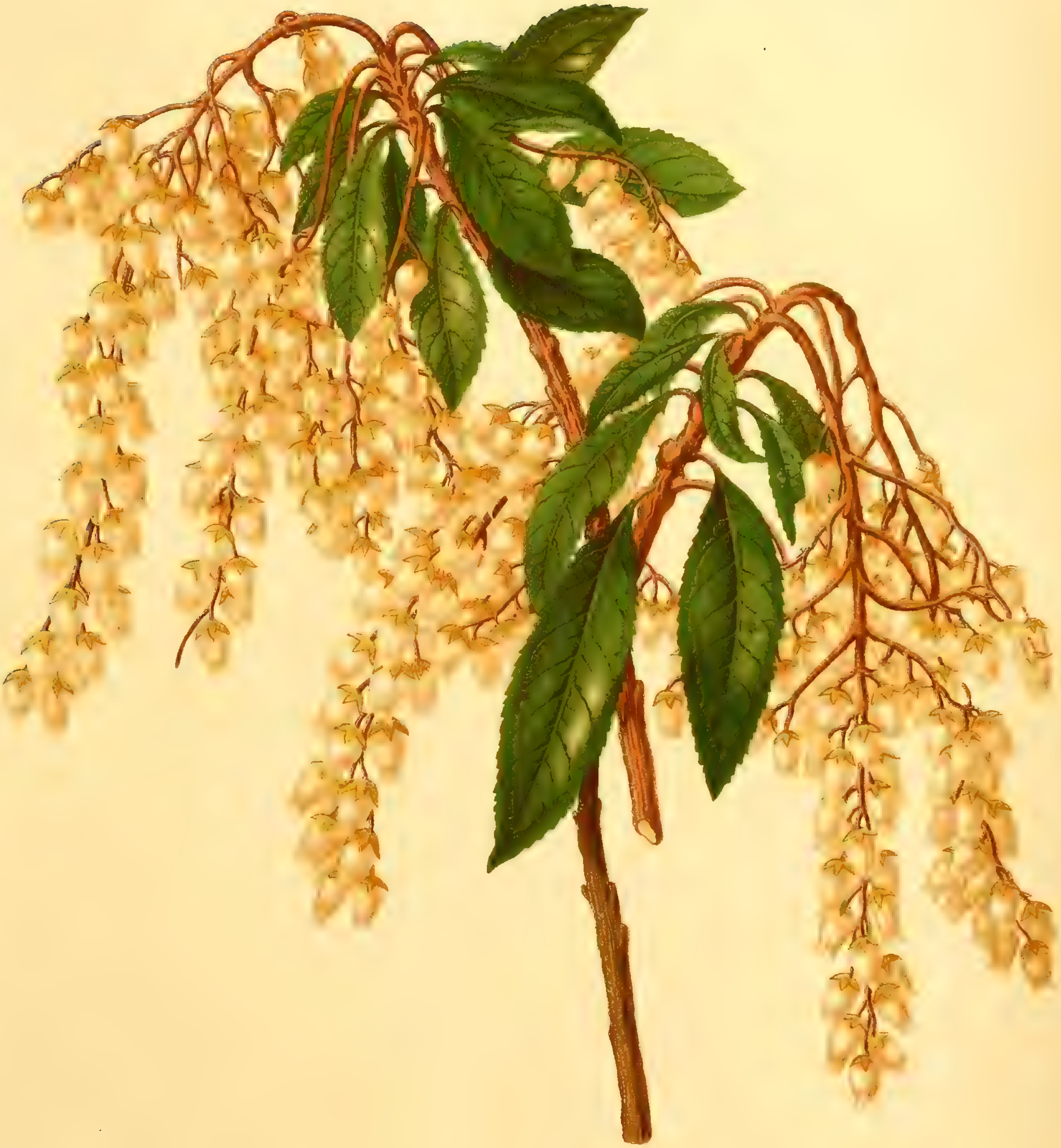
Japan Andromeda (Pieris japonica) is a tall, smooth shrub, with pointed, lanceolate leaves about 2 in. long, which are serrated or waved at the margin, and narrowed at the base, and numerous drooping branched or panicled white, waxy flowers. It is a native of shrubby places in the mountainous region of Japan, where it was discovered by Thunberg, who figured and described it in his "Flora Japonica," t. 22 (published in 1784), and specimens from whom are in the British Museum Herbarium. A variety, having narrower leaves, occurs in a wild state, as well as one having the foliage margined with white. Although at present scarce, this most graceful plant bids fair to become a most useful addition to our stock of spring-flowering shrubs; it is said to be even hardier than A. floribunda and is much more ornamental than that species. Our figure is from a plant that flowered in Messrs. Thibaut & Ketleer's nursery, at Sceaux, in March last. The living specimens from which the plate was made were sent by post from Paris to London, so that the artist did not see them in their best state. A more lovely shrub, when seen veiled over with pendent racemes of white waxy bells, it would be difficult to imagine, and we hope it may soon become frequent in gardens.

American Andromeda (Pieris floribunda).—This is a very handsome North American shrub, sometimes attaining in its native country a height of 10 ft. It is very leafy, the leaves, which are about the size of those of A. japonica, being narrow and oblong, and the very numerous handsome, white flowers being placed in crowded panicles of dense, naked racemes. The individual flowers are urn-shaped, and conspicuously five-angled; they are formed in autumn, and remain throughout the winter unopened, expanding the following spring, usually about April. A handsome winter bouquet may be formed by cutting off a branch and placing it in water in a warm room, when the flowers will open in a few days. It has been in cultivation in England for a considerable time, having been introduced by Lyon, in 1811, and is figured in the "Botanical Magazine," t. 1566, and the "Botanical Register," t. 807.

Indian Andromeda (Pieris formosa).—This is a native of Sikkim and Nepal, ascending to the height of 7000 ft. to 10,000 ft. in the mountainous regions. It has long, crowded, pointed, serrulate, evergreen leaves, from 2 in. to 3 in. in length, with large terminal panicles of drooping rose-coloured flowers, in delicately-pubescent racemes. This species attains the dimensions of a small tree, and like the two preceding species, is exceedingly handsome. It is figured in the "Illustration Horticole" for 1858, t. 162; and in Wight's "Icones Plantarum Indiæ Orientalis," iv., t. 1200. London says that P. floribunda is difficult to propagate; but more recent authors say that all of these Andromedas are easily cultivated and propagated. They will grow readily from seeds, when these can be obtained, if these are placed in pots or pans of moist earth, their germination being facilitated by genial bottom heat. Layering is, however, a more usual and more ready method of increase, the old stems being headed off, and the bases of the young shoots being then covered with soil. They grow best in sandy peat, with a little loam; and cuttings planted in sand and placed under a bell-glass will readily take root. It is more than probable that useful hybrids will be produced between the species described and others allied to them.

JAMES BRITTEN.

The Carrageen Crop.—To the great majority of people, Carrageen, under the more familiar name of Irish Moss, is known chiefly as the basis of a pleasant and wholesome drink for the sick room, or as an article of use in the preparation of delicacies for the table. Comparatively few are aware of its wide and varied use in the arts, or that the thousands of barrels of it employed annually by our manufacturers of paper, cloth, felt and straw hats, &c., and by brewers, is not an Irish, but an American product, and strictly speaking, is not a Moss, but a seaweed. Carrageen (Chondrus crispus) is to be found, more or less abundantly, all along the northern coast of the United States, ranging between the low water line and the depth of 40 ft. or so; but, as a rule, its fronds, which correspond to the leaves of air plants, are so numerously inhabited by small mollusca that they are spoiled for other use. The clean-growing article seems to be limited almost wholly to certain ledges in the neighbourhood of Scituate, Massachusetts— a section of coast guarded by the celebrated Minot Ledge Lighthouse, and famous for its danger to shipping. Here, where the waves of the Atlantic dash with full force upon the rocky coast, the Carrageen grows in perfection; and wherever it escapes the spawn of mussels and other shell-fish, is gathered during the summer season in vast quantities.—"Pharmaceutical Journal."



THE JAPAN ANDROMEDA. (A. JAPONICA)

THE FRUIT GARDEN.

FIELD CULTURE OF HARDY FRUIT TREES.

(*Continued from p.* 396).

Grafting Wax.—After grafting, it is necessary to protect the graft against the effects of the air, the wind, rain, and damp, insects, and birds. For this purpose the whole of the wounded parts are covered with grafting wax as soon as the scions are in their proper places. The compositions used for this purpose are various; the following is one of the best:—Black pitch, 30 parts by weight; white resin, 30 parts; mutton fat, or any other grease, 30 parts; yellow wax, 10 parts. The resin may be left out, double the quantity of black pitch being used in its stead. In case of necessity the wax may be replaced by double the quantity of tallow. Some growers add wood ashes, and red or brown ochre to give it body, but these substances do not seem to influence the quality of the wax one way or the other. Grafting wax should be made of such a consistency as not to melt in a hot sun, or run into the cracks of the tree. This is best avoided by keeping down the amount of tallow in the mixture. Dutch growers use a compound made of 120 parts, by weight, of resin, melted with 60 parts of lard, which must be melted together and well stirred. When wanted for use, it must be dropped into warm water and kneaded to the proper consistency with the fingers, which ought to be well greased or oiled, otherwise the composition will stick to them. In order to prevent the young scions from being broken by birds or the wind, they ought to be tied to an arched support, as shown in fig. 20. In re-grafting strong trees, and in crown grafting generally, the scions ought to be protected against the wind by allowing their shoots to grow as shown in fig. 21. By degrees, however, the young shoots of the stock may be pruned down gradually, in proportion to the development of the scion. As for those on the scion itself, they must be pruned in accordance with the form which we desire the tree to take. It is not well to begin the formation of the crown of a tree by grafting too many scions on the same stock. Caterpillars, ants, and spiders do great harm to freshly-grafted scions, and should be kept down with a strong hand.

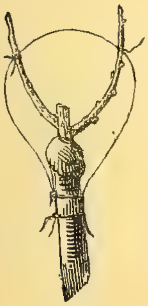


Fig. 20.

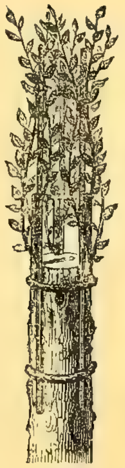


Fig. 21.

Shield budding has one advantage over the other methods of grafting, that it causes no serious injury to the trees, so that it can be used with young wildings; besides which, certain varieties of Apricots and Peaches will only take when grafted in this manner. Besides these advantages shield-budding may be performed at almost any season. We shall see farther on that this method of shield budding, which was formerly employed for growing dwarf fruit trees and for ornamental plants, plays, now-a-days, a very important part in the growing of standard fruit trees. When shield budding is practised in summer, that is to say, before the end of June, it is called shield grafting with a growing bud. This method is not much used, seeing that very little is gained by it, the same end being obtained by shield budding when the bud is at rest, besides which the operation, when performed in June, is much more difficult. Shield budding with the bud at rest is performed from the beginning of July onward, and is continued as long as the bark separates easily from the wood. It does not do to begin indiscriminately with any species of fruit tree. The best trees to begin with are pipped fruit, continuing later on with the Apricot, Plum, Cherry, and finishing with the Peach. The earliness or lateness of the stock must also be taken into consideration; thus a Peach may be grafted earlier on a Plum than on an Almond, the Pear upon itself sooner than on the Quince, because this last named tree keeps its leaves until a late period, and has but little sap at the beginning of the summer. It is erroneous to say in this case that if the shield graft does not take it has died for want of nourishment. The choice of shoots for shield grafting is the same as for the other kinds of grafting. Strong shoots should be taken, furnished with good buds; the herbaceous shoots, the extremities of which have been pruned down to about 1 ft. in length, always furnish the best grafts, their wood being mature and their buds healthy. As soon as they are cut off they should be stripped of their leaves and their stipules, preserving one petiole only, as shown in fig. 22. If they have to be kept for any length of time before being used, they should be wrapped up in Moss or damp cloths, or their ends should be stuck into a piece of Cucumber, Potato, or other succulent vegetable or fruit. It must be borne in mind that in choosing scions for shield grafting the bark must be tender and not too thick. Neglect of these precautions has frequently led to great discouragement. The trees to be grafted are prepared three are four weeks beforehand by relieving them of their superfluous wood, by which means their growth, which has been momentarily checked, has had time to recover itself. The early part of the season is best for shield grafting; and in cases of necessity, it may be confined to a single week. In shield grafting there are four separate operations to perform. 1st. Cutting the shield. 2nd. Cutting and loosening the bark of the stock. 3rd. Fixing the shield graft in its place. 4th. The tying up of the graft. To cut the shield scion properly the shoot should be raised by the left hand, the grafting knife being placed about ¾ of an in. below the bud which is going to be cut, cutting through the bark in a downward direction from ¾ of an in. above the bud. The shield should be held between the trunk and the grafting knife in order to cut away part of the wood as shown in fig. 23. The wood ought to be cut away so as not to remove the heart of the bud. For this reason a thin strip of bark is torn off either from above downwards, or *vice versâ*, according to the tree operated upon. If it be too late to remove the wood of the shield bud it may be allowed to remain without injury, taking care, however, to remove as little wood as possible. In a smooth place, which has been previously cleaned by rubbing it with the hand, an incision is made in the form of a ⊤ (fig. 24), and for stone fruit trees a second incision in the form of a reversed ⊥ should also be made as shown in the figure. It should always be done when shield grafting is begun early in the season, although the method is more troublesome than when a single incision only is made. The two corners of the bark where the incision has been made are then gently separated from the wood with the spatule of the grafting knife, but only just sufficient to

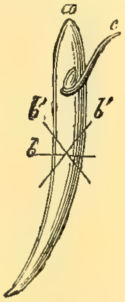


Fig. 22.

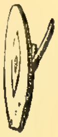


Fig. 23.

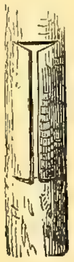


Fig. 24.

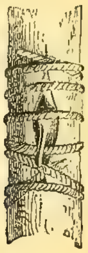


Fig. 25.

allow the bud to be easily slipped into its place. When there is much wood to the graft, the bark should only be partially separated from the stock, and the edges of the scion itself should be used to force its way into the proper position. One great point is to slide the graft into its place as gently as possible. The graft should be held in the left hand by the petiole as shown in fig. 23, and placed in the cross incision, and then quickly slid down the longitudinal slip. The scion is then bound up with worsted, thread, or some other elastic ligature. The cross slit should be well bound, the longitudinal incision requiring less care. If the petiole falls off two or three days after the graft has been made it is a sign that the graft has taken. The operation of shield grafting should never be performed in rainy weather, nor when the weather is very dry, except the number of grafts are few, in which case they may be kept fresh by watering them. The stocks which bear dormant grafts should not be transplanted. When spring sets in the stock should be cut down to within 3 in. or 4 in. of the graft, and the ligatures should be loosened unless the swelling at the point of junction has not already necessitated this operation.

Shield grafting Fruit Scions.—For some years past fruit-growers have been in the habit of using the mature shoots of Apple and Pear trees as grafts; by this means it is easy to fill up vacant spaces and, so to speak, force the trees to bear fruit, and in many cases put fruit on a vigorous but unfruitful tree.

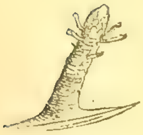


Fig. 26.

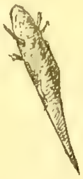


Fig. 27.

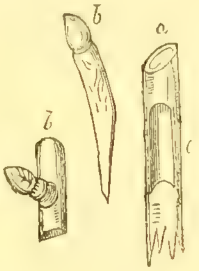


Fig. 28.

It affords, also, an easy means of trying the hardiness of a particular variety whose qualities in this respect are, as yet, unknown, before planting it in the open air. Many orchardists have an absurd fancy for growing four or five different varieties of Apples or Pears on the same stock; this kind of fancy grafting ought to be given up, seeing that, when adopted, it only results in producing trees of irregular growth. By shield grafting with a fruit-bud, a stock may be made to produce several different varieties of fruit without compelling the tree to bear branches of varying vigour, direction of growth, and fertility. This method of shield grafting provides us with an excellent mode of gaining a knowledge of different varieties of Apples and Pears without being obliged to plant a large number. Strong, hardy, free-growing trees may be easily used as sample growers. The proper method of cutting a fruit-bud is shown in fig. 26. If the bark does not separate easily, the mode of cutting figured in the next cut must be adopted. On a branch (*a*) a small piece of bark is cut with a layer of wood attached to it, and the grafts (*b* and *b*) are fitted into the vacant space. The best season for shield grafting is from the end of July to the end of August. Before this period the fruit-buds are not formed, and cannot be cut away with their own wood attached. They are also more difficult to be distinguished by an inexperienced eye.

Permanent Planting.

Orchards.—These ought to be so situated that they may be open to the beneficial influence of the sun and air, a condition of growth which is absolutely essential. A low and damp situation, in which the air is continually surcharged with moisture, through not being able to circulate and renew itself freely, exercises a very baneful influence on trees and fruits, as well as animals. Fruit produced under such conditions is generally watery and wanting in flavour, especially when the summer has been cold and damp. The truth of this is proved by the enormous difference in flavour between an Apple which has ripened on the sunny side of a tree, and one which has come to maturity in the shade. Strong sunshine makes the wood healthier and hardier, and increases the number of fruit buds. The orchard consequently ought to be open to the south or south-east, and it will be an advantage if the northern or north-eastern sides are protected from cold winds and hurricanes by buildings, hilly ground, or other trees; it must, however, be borne in mind that the shelter must not be so thick as to impede the free circulation of the air. For instance, an orchard cannot be planted with its back to a thick wood, or even too near to it, without the trees of both plantations eventually injuring each other. Small orchards surrounded by thick hedges often fail to bear proper fruit on account of the air being constantly stagnant. Perhaps the best protective surrounding for small orchards is a wide deep ditch. It may be argued that a large amount of space is lost by this means, but as the trees can be planted up to the very edge of the ditch the argument is fallacious. These trees, being exposed to the full action of the sun and air bear as well as the others, whereas when the orchard is surrounded by a hedge, the trees near to it are generally less productive than the others. Where no natural shelter exists the same end may be easily attained by planting the sides which require protection with tall Walnuts and Chestnuts. It is also an advantage to choose a situation which has a slight inclination from north to south, or it may even be produced artificially when the ground is being prepared for the planting of the trees. Such an inclination is necessary in the case of damp ground, and should not be less than 2 in 100, a gradient which, although imperceptible to the eye, exercises a great influence on the health of the trees. There are but few localities in which the soil is fitted for the growth of every variety of fruit tree, some kinds flourishing in places where others are perfectly barren. When the soil is only of middling quality, the grower should confine his attention entirely to those varieties which thrive best on a moderately rich soil, for it is a difficult and costly operation to wholly change the nature of the ground by the addition of the missing materials, which are necessary for the growth of each particular variety. When we come to speak of the different species of fruit trees, we shall enter into the consideration of the aspect and soil most fitted to each of them, and shall show that if the soil be not of a high degree of excellence it is seldom profitable to plant a large number of varieties. For the same reason we shall point out the particular kinds which ought to form the bulk of the plantation. The position and nature of the ground are in direct relation to the extent of the orchard. The less fitted the soil may be for the growth of fruit trees the smaller should be the orchard, for, on a large scale, the cost of planting and after cultivation would be too great, and the chances of success too small, even if the best methods be adopted. We may remark, however, that, as a rule, orchards in this country are much too small, although the advantages of fruit growing as a profitable investment of capital and labour are becoming better known and appreciated every day. We may, however, notice an instance of the power of prejudice and routine in the case of certain fruit growers. Formerly the orchard was limited to the space comprised around farm buildings, and cultivators are loath to see fruit trees elsewhere. Who, however, can deny the great advantages of large pastures planted with fruit trees in the immediate neighbourhood of a farm, the fruit trees being at first planted as mere accessories frequently turning out to be more profitable than the pasture itself. On the occasion of M. Burvenich's visits, as a member of the jury, to certain provincial fruit shows, he rarely found an orchard which had been purposely planted for the sake of profit of any great size. Amongst over sixty orchards barely ten were larger than half a hectare.

Preparatory Work.—The ground needs careful preparation, according to its peculiar qualities. The portion set apart for an orchard ought to fulfil two essential conditions before the operation of planting is commenced. The subsoil ought to be tolerably porous, and covered with a pretty thick layer of fertile soil. Permeability is a property which all soils ought to possess, whatever may be their nature. This important point in successful fruit-growing is too frequently neglected, growers being generally satisfied if the young trees grow well and bear an abundance of wood during the first few years.

It is evident that a young tree ought to show vigorous growth if we wish to obtain good results from planting it; but it must always be borne in mind that trees grown in a cold, damp soil bear late and yield fruit of an inferior quality. In the first chapter we explained how necessary it was that the air should have free access to the roots. A soil which is of a sufficient consistency to prevent the rain from percolating freely through it is rarely sufficiently pervious to the air. All operations, therefore, which are undertaken with a view to increase the permeability of the soil and improve the drainage should be commenced at the very outset. These operations are of various kinds. We have already remarked that it is of advantage to give the ground a slight incline, but this is not sufficient when the soil is damp and heavy, or in a low situation. In the first case, the following method must be adopted:—The ground is divided into portions equal to the distance at which we wish to plant the trees from each other, as shown in fig. 29. Deep and narrow drains are dug in the direction of the incline, at the bottom of which faggots or sticks are placed, in order to facilitate the drainage. Elm is an excellent wood for this purpose, as it bears damp without rotting better than almost any other wood. A layer of straw is placed on the top of the faggots, so that the soil may be well pressed down and not fall through the branches. The earth should be well trodden down, so as to form an impermeable mass. Bramble, Furze, Heath, or Fern may be used instead of the faggots or sticks. The plots are formed into ridges in such a manner that the part in which the trees are to be planted shall be the highest. If the soil be very damp, the trees should be planted on little mounds. This matter will be more fully explained in the chapter on planting. A piece of ground, situated in a very low position, may be improved by digging trenches as just described, with this difference, that they must be dug much wider. These trenches may be filled with any waste vegetable matter. Dug in this way, these trenches afford the amount of soil necessary for raising the surface, and, of course, act as efficient drains. This method may also be adopted in cases where the layer of vegetable mould is comparatively shallow. When operations are carried on on a large scale, the trenches need not be filled up. Open trenches, however, have this inconvenience, that the edges of the plots are constantly falling, on account of cattle and sheep continually grazing on the Grass which borders them, thus necessitating frequent attention. In certain cases this mode of drainage is to be recommended, especially if the plan shown in fig. 30 be followed out. The trenches should be dug at least 3 ft. in depth, and should be partially filled with clinkers. The rain-water not only percolates through the clinkers, but in its passage it acquires fertilizing properties, as is abundantly proved by the trees which have been planted along the sides of roads macadamised with this material. By following the directions given above, we may form an orchard in a meadow in a heavy soil, and situated in a low position. Taking fig. 30 as our guide, we dig trenches 30 ft. apart, 2 ft. 9 in. wide, and 3 ft. 3 in. deep. They should be filled in with clinkers to the depth of about 10 in. or 1 ft. All round the meadow a trench should be dug slightly deeper than those between the ridges. The earth taken out of this trench may be used for heightening the plots. Glass-house waste, the refuse from blast furnaces, or any similar material may be used for filling in the trenches. In heavy clayey districts, the dampest land may be effectually drained by following the above directions, more especially in the manufacturing parts of the country, where the materials mentioned may be had for the asking. Drain pipes are not to be recommended for orchards, for in spite of every care, the roots penetrate the joints, and speedily put a stop to the flow of the water, except where very large pipes are used; even then the method of forming trenches just described is to be preferred.

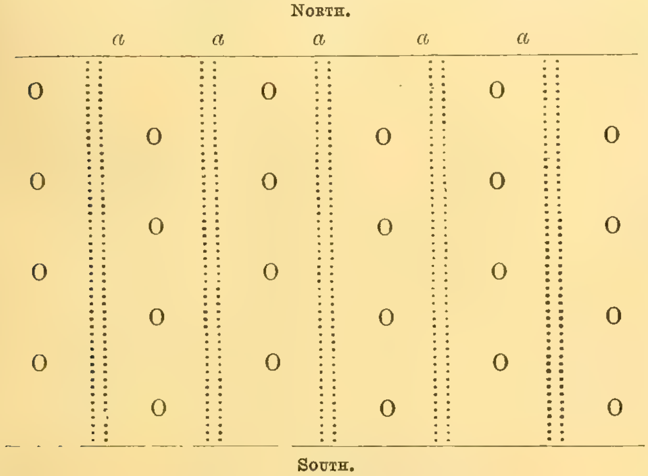


Fig. 29.—Dotted lines, Drainage; O, Trees.

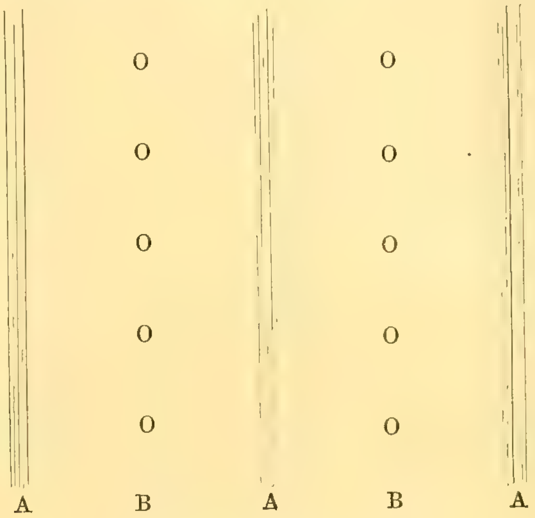


Fig. 30.—A, Trenches; B, Trees.

Planting Out.

Although it is better to choose varieties which are adapted to the soil instead of trying to adapt the soil to the trees, it must not be supposed that an orchard can be established on a piece of ground that has received no previous preparation. The ground must be dry, and manured superficially at least. In former days, the method of planting fruit trees consisted in digging a hole in the ground, cramming the roots into it by force, filling up the interstices with the earth which had been dug out, and finally treading the whole level with the surrounding soil. The importance of a proper method of planting is, however, fully recognised now-a-days. It is very false economy to spare pains and expense in preparing the ground for an orchard; on the other hand, an unnecessary amount of labour may be easily incurred by the inexperienced. It is seldom necessary to dig the ground as much as two spits deep except in the case of an old Osier bed, or Lucerne field, or a cleared wood. If the land be arable or meadow, it is only necessary to dig well round the spot which each tree is to occupy. If the soil be somewhat poor it should be dug along the whole length of the strips to be occupied by the trees. The trenches between the strips should be made as wide as the size of the ground will allow, and should not exceed 3 ft. or 3 ft. 6 in. deep. Many planters err by making the trenches too deep, under the idea that the roots will bury themselves more deeply. The good earth taken out of the holes or trenches is placed on one side, while that which is sandy or clayey may be thrown on the pathways. The holes having been dug out, they are filled in first with waste cuttings or turf, and then with the soil taken out of them, which should be first mixed with good manure, if it be easily procurable. The soil should be lightly filled in so that the air and rain may percolate through the mass. The holes should be filled in some time previous to the trees being planted, in order that the soil may settle down to its proper level naturally.

Arrangement of the Trees.—The order in which the trees are planted should be such as should give the effect of an avenue from several points of view. The different varieties, also, should be so placed that trees of different heights may not be intermixed. Plantations may be made in squares, as shown in fig. 33, or in quincunx, as in fig. 34; the latter method is to be preferred, inasmuch as the crowns of the trees grow with a greater amount of freedom. It may not be out of place to describe the method of planning a quincunx plantation, such a piece of work being only too frequently badly executed. Suppose that the trees are to be planted 25 ft. apart. A line is marked out with pegs 25 ft. apart, A, B, C, D, E, as shown in fig. 35; a string, 25 ft. long, is then attached to the peg A, and a circle described round A as a centre; the same is done with the other pegs, and the points where the circles intersect on both sides of the line are the positions in which the other trees are to be planted. The two new rows are thus taken as starting points, and the same operation is gone through until the plot is completed. There is another method of planting which, although not to be recommended, may often be found useful. It consists in planting two rows, side by side, in alternate order at a distance of 16 ft. or 20 ft. apart, leaving between each double row a space of 40 ft. or 50 ft., which may be used for planting vegetables or for other purposes; the space between the double rows is favourable to the growth of the trees. This method of planting is shown in fig. 36. Whatever plan may be adopted, it should always be borne in mind that it is better to plant those varieties in the same row which ripen about the same time. By this means we shall keep apart those kinds which are apt to injure each other, besides which the gathering of the fruit is much facilitated, and each variety can be planted in the aspect most suited to it. The most open position should be given to those trees which flower late, and which are, consequently, less liable to the influences of spring frosts and cold winds. The following rules will help the grower in choosing the best situation for each kind of tree:—For Apples a slightly shaded situation is rather an advantage than otherwise, for it may often be remarked that those of the Apple trees which are the most seldom visited by the rays of the sun are the most vigorous. The Apple must not, however, be exposed to winds from the north or east, otherwise the bloom will be injured. Its best place is in the middle of the orchard, where it is protected by other fruit trees. Late varieties should be planted on the outside as much as possible. The Pear, whose bloom seems to suffer less from cold than that of the Apple, may be planted on the north and east sides of the Apple orchards, by which means the Apples will be sheltered completely by the taller and thicker-leaved Pear trees. Cherries and Plums do not last long in heavy ground; they require plenty of air, and thrive best on the west and south sides of the orchard. They may be planted in the kitchen garden, for the crowns and roots, developing but slowly, they do but little injury to vegetables growing between them. Peaches and Apricots succeed badly when grown in open quarters, except in exceptionally favourable situations. The Walnut and Sweet Chestnut soon attain their full development, giving plenty of shelter and shadow. The best place for them is on the north and east sides of orchards, or in avenues at a distance from gardens in arable fields. When grafted they grow more slowly, but yield a larger quantity of fruit. The Mulberry likes a fresh, deep, fertile, and well-drained soil. It gives plenty of shade; its wood is hard, but rather brittle—hence it suffers from high winds. It ought to be placed under the lee of a building, as it will not resist the severity of a northern climate if planted in an exposed situation.

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Fig. 33.

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Fig. 34.

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A                 B                 C                 D                 E
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Fig. 35.

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Fig. 36.

(*To be continued*).

OCTOBER PEARS.

There are so many excellent kinds of Pears that ripen during the month of October that it is difficult to make a selection, but, in continuation of our illustrations of some of the best kinds, the following must have a prominent position:—Duchesse d'Angoulême (fig. 1), one of the largest of Pears, is handsome both in shape and appearance. In warm seasons the flesh is buttery and melting, but, as a rule, it is coarse-grained and gritty. It is a grand exhibition Pear, but to ensure its always being good, it should be grown on a south or west wall. It is a free bearer in any soil or aspect. Helene Gregoire (fig. 2) I have not seen grown in England, except in a garden in Hants. It was obtained from Van Houtte, of Ghent, and is grown in the form of cordons on a south wall. The fruit, which is excellent, has a strong aromatic flavour and is very juicy, and it will keep for a month after being fully ripe. The tree is a vigorous grower, a free bearer, and worthy of a place in the most select collections. Red Doyenné (fig. 3) is a well-known little Pear that is always good. I find it to succeed admirably grown in the form of bushes, kept well pinched in, and at the same time fed

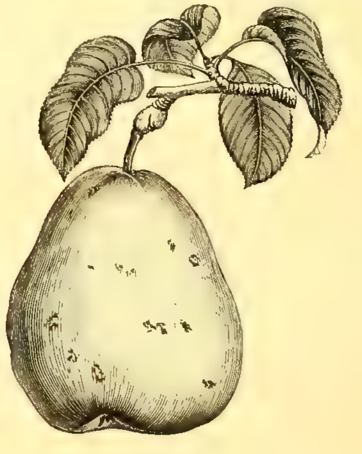


Fig. 1.—Duchesse d'Angoulême.

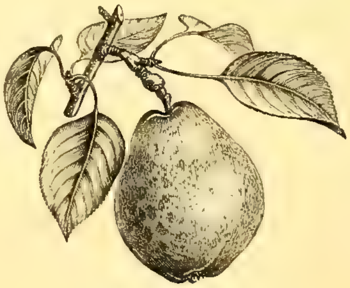


Fig. 2.—Helene Gregoire.

liberally with manure, or manure water. The pinching cripples growth and makes it fruitful, whilst the manuring feeds the fruit. Marie Louise (fig. 4) is too well known to need a word either of description or recommendation. I may say, however, that its season may be greatly prolonged by not picking all the fruit at one and the same time, but a portion only, at intervals of a week or ten days; that first gathered will ripen proportionately earlier than the last. Conseiller de la Cour (fig. 5) is a handsome, finely-coloured Pear, of large size and passable quality; it is, however, very much overrated, for, at best, the flavour is never more than second-rate. It is a productive bearer, and on this account may be worthy of the attention of market growers. Durondeau (fig. 6) is one of the most beautiful of Pears, the skin being a shining russet streaked with deep red on the side next the sun, whilst the shaded side is, when fully ripe, a pale yellow; the flesh is most delicious, and the tree an abundant bearer. It is worthy of a wall and the most liberal culture. Calebasse Tougard (fig. 7) is also a large, handsome-looking Pear, of excellent quality; it is one of the few kinds that ripen best on the trees, but it requires to be used as soon as it is gathered, as it soon rots deceptively at the core; if gathered before it is ripe, it rots before it becomes in any way usable, except for stewing. Délices de Lovenjoul (fig. 8) is a very excellent medium-sized Pear, of the Doyenné type. It is suitable for growing as bushes or as small standards, as recommended in the case of the Red Doyenné. It is extremely productive and hardy, and therefore specially adapted for small gardens. W. W. H.

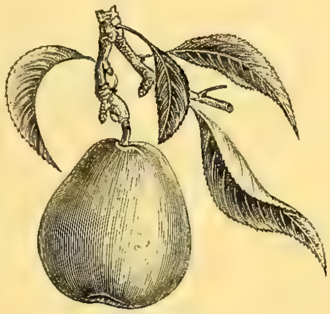


Fig. 3.—Red Doyenné.

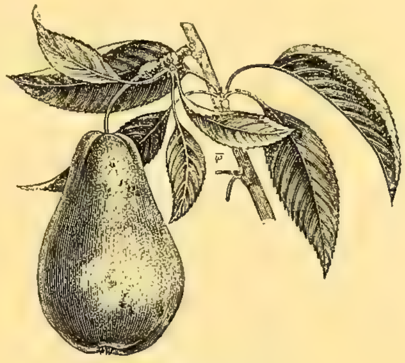


Fig. 4.—Marie Louise.

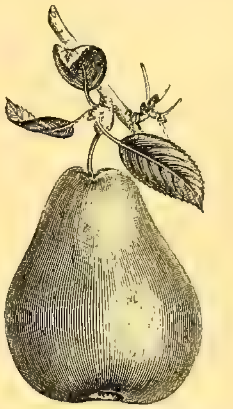


Fig. 5.—Counseiller de la Cour.

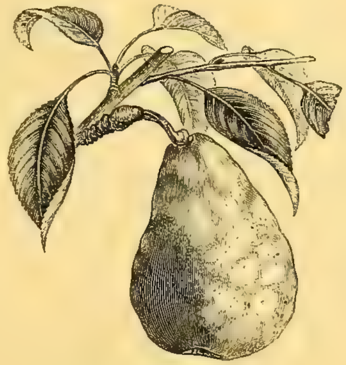


Fig. 6.—Durondeau.

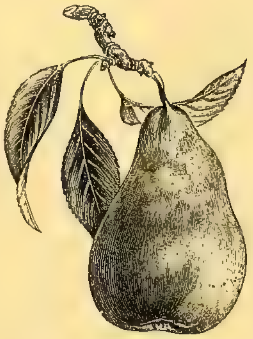


Fig. 7.—Calebasse Tougard.

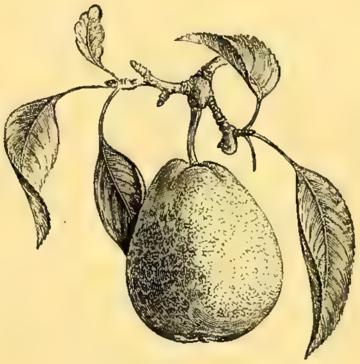


Fig. 8.—Délices de Lovenjoul.

The Pear Walls of the Future.—In the very excellent woodcut (see p. 393) the Easter Beurré Pears appear to me to be crowded. I should much like to know the distances at which the trees stand apart. I feel quite persuaded that the training represented is that which will fill our fruit-room shelves with Pears. Four years ago I planted a wall with Plums, the varieties being Prince of Wales and Victoria, and the wall is now entirely full of good-bearing wood; they are trained with three upright stems, three shoots instead of five. The old fan training generally employed takes too long to fill the walls, which, in fact, seldom get filled at all, and much valuable space is thereby lost. I have also got Cherries trained in like fashion, and intend, as my Pear walls want replenishing, to do the whole in like manner.—R. Gilbert, *Burghley*. [No doubt the upright way is the way for the future. The engraving to which Mr. Gilbert alludes was from a photograph taken to show the length and size of the wall, and therefore it makes the trees appear closer than they are; but they are really so spaced that both trees and branches have ample room for full development. The high wall allows of a fair growth to the branches, which can exhaust themselves in fruit-bearing, and need not be continually cut back to repress their vigour. A fine crop was gathered off this wall even during the past bad season. It consisted of about ten Pears to the square yard, and the fruit was both large and good; such as bring high prices after Christmas and in early spring.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Josephine de Malines Pear.—With us, this, is one of the most satisfactory Pears grown, either on walls, espaliers, or pyramids; on walls we have a fine crop of fair-sized fruit for dessert; on espaliers and pyramids it is generally russetted, but quite equal, if not superior, in flavour to those on walls. This variety has a very distinct habit of producing flower buds on the terminal growths; therefore, in pruning, these should be cut off, if it be wished to extend the shoot down to a wood bud.—J. Groom, *Henham*.

The Vintage is not yet terminated in the Hautes-Pyrenées. The Vines are, so to say, inexhaustible. Everybody is seeking in all directions for casks. Never, in the memory of man, has such a rich crop, as far as quantity goes, been seen. As for quality, it will rival that of 1865 or 1870, and many people believe it will surpass them. No stoppage in the sap has taken place. They are full of juice, and the skin is fine and bright-coloured.

Cranberry Imports.—At the general meeting of the German Pomologists, mention was made of the shiploads of Cranberries exported from Ohio to England and Hamburg. All this is very interesting, but it would be more interesting to know what becomes of all these Cranberries. Do the wine merchants know anything about them?

HOUSEHOLD HORTICULTURE.

As all of us cannot have a Kew garden of our own, we must needs content ourselves with something less comprehensive. But even Kew's capabilities are limited. It cannot cultivate every herb which, as the poet saith, "sips the dew," even if, perchance, it could get them all. For yet stronger reasons, our own private collection must be still choicer and more select. The vegetable kingdom is vast, while our means and appliances may be exceedingly restricted. How, then, under such circumstances, is the passion for gardening, which is innate in so many human breasts, to be gratified? The problem admits of easier solution than at first sight may be obvious. As it is impossible that you should make a familiar friend of every plant which exists on *terra firma* as well as on earth which is not firm, not to mention aquatics which grow in water, you have only to decide which you prefer. A man cannot keep up even a bowing acquaintance with every one of the four millions who dwell in London, but confines his friendship to a favoured few; and so must it be with your horticultural pursuits, whether merely household or on a larger scale. You must decide what line of cultivation you will go into, which does not exclude the heterogeneous and the miscellaneous—the odds-and-ends line of horticulture. Household horticulture is undertaken either for show and display, by which is meant a most laudable means of domestic decoration, or else with personal and private study or recreation for its principal object. In both cases the choice of subjects will depend whether the preference is given to foliage or flowers, to form or to colour, to the phenomena of growth and development, or of inflorescence. The fine foliage class may be made to include many plants possessing, in addition to their ornamental merits, great botanical and economic interest. Although not a few plants, uniting commercial value with good appearance and even beauty—the Nutmeg, Coffee, Cinnamon, Black Pepper—must have a hothouse to do well in the United Kingdom, others will thrive in the temperate atmosphere of our houses. Want of space forbids our giving more than a hint which, as a word to the wise, may direct attention to what will be found a delightful branch of horticulture. Some people, too, may like to grow plants which not everybody else possesses. The Black Tea (Thea Bohea), is a handsome shrub with evergreen leaves, producing small white flowers in September. Green Tea (T. viridis), resembles it, but is of taller stature, and has narrower leaves. It should be mentioned that the Chinese Tea-plant is vulgarly confounded with Lycium europæum and L. barbarum; the latter the Duke of Argyle's Tea-tree, a coarse, hardy, unprepossessing, trailing shrub, which has the merit of making hedges and arbours in the sandiest and most sterile soils. There are also persons who boast of growing their own Coffee in the open ground in Flanders; but they only do so through a like misnomer. Their vaunted Coffee plant is a Lupine, whose seeds, roasted and ground, furnish the pretended Mocha. Whether the beverage so obtained is better or worse than that from Hunt's once-famous roasted Wheat, I cannot say, for I have not tried it and don't intend to do so. I do however, propose trying to cultivate in my study, as you would a Myrtle—another most desirable pot-shrub—the Camphor Laurel (Laurus Camphora), all parts of which exhale their special odour, and which is included by nurserymen in their temperate-house catalogues. The Castor-oil plant (Ricinus), common enough in gardens as an annual, and suffered to perish in autumn, becomes a tree in warm localities where it never freezes. Grown in a large pot or tub and kindly treated, the Ricinus becomes a handsome object when two or three years old, deserving a place in summer on a lawn (with its pot plunged and hidden in the ground), as a semi-tropical specimen. The Australian Blue Gum (Eucalyptus globulus), of whose fever-absorbing powers so much has been said, and respecting whose possible hardiness in Great Britain unfounded hopes have been held out, makes a handsome and striking pot-plant, notwithstanding that it rapidly grows out of all bounds, and will not conform itself to pruning or pinching operations. Its sea-green leaves, covered with a whitish bloom, give out when crushed a balsamic odour, which is a combination of Camphor, with the resinous scent of a Pine-grove. A liqueur resembling Chartreuse has recently been distilled from them in France. Seedling-plants are cheaply obtainable. For the first two or three years, with regular waterings, they make charming pot-plants. When they reach the ceiling and find they cannot get through it, they may be transferred for experiment to believers in acclimatisation, and their place supplied by fresh-raised youngsters.

Fine-foliaged plants include the whole long list of Ferns. A few Palms in their young state may also be grown in sunny apartments, without causing any great disappointment; but although unquestionably things of beauty, they cannot continue to be joys for ever, because, if alive and well, they would eventually outgrow, however slowly, the space which can be accorded to them. The most recommendable household Palm is Latania borbonica, with shining green leaves, from which the dust is easily wiped; Raphis flabelliformis makes a formidable rival to it, on account of the greater lightness of its foliage; Chamærops sinensis and humilis are more sombre in their hues. Corypha australis, with Phœnix reclinata and sylvestris, furnish a sufficient variety of this set of vegetable forms. But the catalogues of the leading nurserymen, British and foreign, contain more information than is possible even to glance at here. Nevertheless, I make bold to say that, valuable as they are in other respects, they are not always absolutely sure and certain guides as to temperature and atmospheric humidity, and, in consequence, as to probable adaptability to household culture. Nothing but an actual trial of plants can determine exactly what they will stand in living rooms. One would expect that all plants assigned to "cool-house, greenhouse, *serre froide, serre tempérée*," might live and flourish in ordinary apartments under suitable conditions of light, &c. But no; many charming things, so classed, pine in rooms after a more potent stimulus to their vitality. I have had Blechnum brasiliense, and not a few other foreign Ferns, lingering for a couple of years in a continuously ineffectual struggle for existence, before I could resolve to consign them to the cemetery of plants, *i.e.* the manure heap, there to be converted into sustenance for a fresh generation of favourites. 'Twas disappointment long drawn out. And yet an excellent catalogue, by a first-rate horticulturist, makes Blechnum brasiliense a *serre froide* tenant. I can only say that all *serre froide* tenants are not, with me, suitable for living rooms; which does not prevent others from trying their luck or their skill with the like. When once you know your own mind, and have agreed with yourself what you like best, now is a good time to buy plants in pots, both for immediate service and to come in for winter use. I make no mention of annuals or of things that are good only for the season, and that a short one. Any one can purchase a pot Mignonette, Omphalodes linifolia, Maritime Stock, and such like, and throw it away when faded and done with. That is not horticulture, either household or open air; although buying the seeds of annuals, and flowering them yourself indoors, is a proof of considerable cultural ability. The lady who can show a pot of well-grown Ten-week Stock, or that dear little Everlasting Rhodanthe Manglesi, is no mean house-gardener. A great point is to select, for spring and summer show, plants that will give as little trouble as may be to get through the winter. Splendid while they last are many of the Cactuses, especially C. speciosus and C. speciosissimus, and the numerous hybrids obtained from them. Certainly they are ugly enough when off show. Cactus or Cereus flagelliformis, the old Whip Cactus, is characteristic when perched aloft on a sunny bracket, and allowed to droop naturally; which is better than training it into fans or on vase-shaped wires, however readily it may lend itself to the plan. The Night-blooming Cereus, C. grandiflorus (of which six or eight varieties exists), requires more heat and space than living rooms can conveniently afford. A generation or two ago it used to be an excuse for jovial suppers in amateur succulent houses, to witness the expansion of its large handsome flowers. The guests who sang and practised "We won't go home till morning" might also witness their fading too. C. peruvianus has a variety, monstrosus, which grows into the shape of a dark-green bit of Japanese rockwork, and the older it is—thirty, forty, fifty years—the more strange and eccentric its aspect becomes. For a long time nobody knew what it was, until, flowering in 1814 in the Montpellier Botanic Garden, it betrayed to M. de Candolle the secret of its identity with the Taper of Peru. It is a curiosity of the easiest culture, which you may stick out of the way when you are tired of its sight and bring back again when you wish for another look at it, observing, however, that it must neither freeze nor rot with too much watering. It is the very thing to set in the sunny front of an old-style druggist's shop, for it is sure to impress the multitude with the belief that it is the source of some potent and priceless specific elixir. All the Cactus family submit more or less to this free and easy mode of treatment; a smaller species, C. or Mammillaria Ottonis, shaped like a plump, deep-ribbed pincushion, gives as little trouble as the preceding, and annually produces a crop of brilliant-yellow crimson-centred flowers. Most of these, even when out of flower, are useful to stop a gap in a window when other occupants are on leave of absence.

A most handy, pleasing, showy, and easily managed family of plants for summer display are the tuberous-rooted Begonias, both typical species and hybrids from them. Their foliage is bright and fresh; their flowers, produced in long succession, continue to appear from the first day of blooming until the date of their winter rest (which the majority of this section strictly observe), while a few go on flowering through the very deadest season of the year. Their colours are white, yellow, red and vivid scarlet, comprising intermediate hues of buff, orange, and pink; sometimes with delicate shadings and contrasts in the petals of the same flower. But their great recommendation to household horticulturists is, that the varieties which hibernate do so frankly and completely. Even young cuttings raised during the season follow in this the example of their parents. These latter may be purchased late in bloom, showing their qualifications and what they can do. About November they will flag, and their stems will spontaneously part from the root, as if they were dying. It is no such thing; they are only going to sleep. Then is a good time to repot them (in light rich soil, half leaf-mould or spent Cucumber-bed and half fresh loam) in larger pots, if required. The plants increase in beauty with age and with the increasing size and strength of the tubers. You thus get specimen plants with just pretensions to exhibition. The quality and freshness of the soil are mentioned on account of their importance, although in large cities it is often easier to procure new plants than good earth to repot old ones in. If no other source be available, it must be obtained as a favour from some benevolent nurseryman. When repotted, let them take their repose in any snug corner or shelf where it does not freeze. Light or darkness is all one to them then. Keep them dry rather than moist, but not absolutely dry as dust. Too damp, they may rot; while excessive dryness will retard their starting in spring. The judicious amateur will hit upon the happy mean; which reminds me of the late M. Van Houtte's recommending for Genethyllis tulipifera (a greenhouse shrub, with Box-like foliage, bearing large cream-coloured flowers striped with red) plenty of air and "intelligent waterings." There indeed he hit the mark, and gave to the world a golden rule. By "intelligent" measures great things may be done in the plant way as in other matters. In March or April take your potted tubers out of their retirement; give them plenty of sunshine and moderate moisture. If they make numerous shoots, you may remove the superabundant ones when 3 in. or 4 in. long, detaching them at their junction with the tuber, and plant them in small pots separately. They will strike root, forming tubers of their own, like Dahlia shoots (as will cuttings taken from the main stems during summer), flower the same season, die down in autumn, and so take their rest. There is no need to repot them till the following spring after they have started, leaving their old balls of earth unbroken while shifting them into a larger pot. The tuberous Begonias now are legion, and before long will be scores of legions. The good old B. discolor deserves a place for the sake of "auld lang syne;" besides, it it hardy in the open border in ordinary winters; and besides that, its large red-veined leaves are very effective seen from within doors, especially under sunshine, a point not to be lost sight of by window gardeners. It is this property of semi-transparent colouration which gives great value to sundry plants with inconspicuous flowers, such as Achyranthes Verschaffelti, the dark-leaved varieties of Ricinus, and others. It is from a red vegetation like these that the planet Mars, astronomers tell us, derives his fiery hue. Don't patronise Coleuses, in spite of their beauty, unless you have a hothouse in which to winter them. Free bloomers, not new, but inexpensive, are Begonias Weltoniensis and Chelsoni, hybrida, and B. bolivunsis, a striking species, the parent of many varieties present and to come. Great things were expected of B. octopetala; but I have not yet been able to get it to flower, perhaps for want of sufficient heat to start it earlier in the spring.

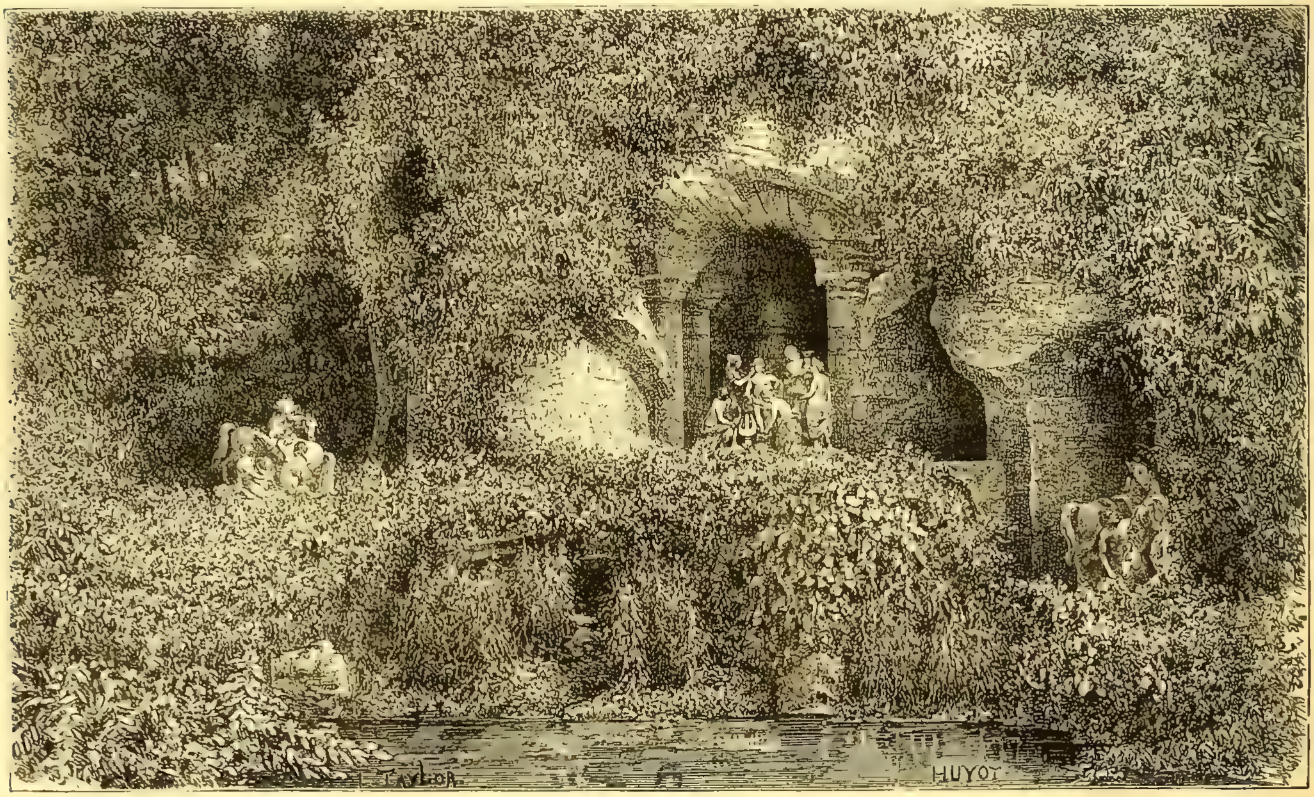
To M. Lemoine, of Nancy, has been awarded a first-class certificate for his new double-flowered, tuberous-rooted Begonia Gloire de Nancy, of a brilliant vermilion red. We shall see whether doubleness in Begonia blooms, which is fast coming on, be an improvement or not. Every flower is not the better for that change. To my mind the single Snowdrop is more graceful than the double; the same with many Fuchsias; while double Petunias are often mere wisps of coloured rags and scraps. B. balsaminiæflora, a double-flowered Begonia with light-green foliage and a compact and low habit of growth, is well worth attention. The blooms, of a pleasing shade of light red, are produced in the proportion of one double-flowered male between a couple of female blooms, which latter are invariably single.

Carpet-bedding being all the fashion, I don't see why chamber-gardeners should be deprived of that mode of charming the eye. Consequently I am trying my hand at a portable carpet-bed, a sort of toy garden, made principally with cuttings, which really promises to exhibit the prettiness of a dish of salmagundi. I take a round earthern pan, like those used for raising seedlings, but with upright sides, 4 in. deep. The only pattern this admits is concentric circles; in a large circular vessel a star might be worked. My outer circle is composed of the small Spiderweb Houseleek; the second, of Golden Variegated Lemon Thyme; the next, of White Variegated Thyme, producing a ring of grey; then come sprigs of Achyranthes, with a plume of Golden-Feather Pyrethrum in the middle. There! You may set it on your dinner table. I have seen ornamented cakes and tarts considerably larger than this experimental piece of plant confectionery. One advantage which it possesses over beds in a parterre is, that if you don't like it you can throw it away. It ought to have contained a circle of white, but the Centaureas are too big. With a wider diameter I could have employed Gnaphalium lanatum.

Cultivators obtain great results by the application of bottom-heat in their frames and houses. During the fine season, plants in the open ground profit by the same healthy stimulus. On a summer's afternoon thrust your hand into the earth of a sunny border, and you will feel what sort of temperature it is which enables roots to perform their functions. Window plants are rarely allowed to enjoy the comfort of having their feet kept warm. Even in a south window, the pots, being considered unsightly, are usually placed out of view, below the line of the sash's woodwork, so that the sun's rays never fall upon them; or they are incased in pretty envelopes of card-paper, wood, or porcelain; or they are so crowded as to shade each other from the vivifying influence of sunshine, except for a brief moment. The plants suffer accordingly from a never-ceasing chill at the roots, especially if too freely watered. The obvious remedy is to raise the pots sufficiently to let the roots (the plant's purveyors) bask in the sun, as well as the foliage and the flowers. If the window-sill or shelf do not lend itself easily to this purpose, a simple mode of raising the pots, that need exposure to warmth is to set each pot on another empty pot of the same size inverted. This plan involves no fixtures, and allows changes of plants to be made as often as is wished. Carrying out the same principle, water always with tepid water, never with water colder than the air of the room in which the plants are growing. Earthworms are a great nuisance in a flower-pot in which a plant is well established; and it is easier to let them get in than to get them out. Often they are introduced with the soil when the plant is potted; search should therefore be made for them (as well as for even more destructive larvæ) during that process. But they are inquisitive as well as curious creatures, and if a pot be left standing on the open border, they will wriggle themselves in at the hole made for drainage, to try whether its contents are to their taste or not. To prevent this intrusion pot-plants set out-doors should be placed on a board, or on bricks, on a layer of dry cinders. Not only do worms disfigure the surface of a flower-pot, but they rob the plants. Like every other living creature, they must feed on some thing; and their diet is earth, which they afterwards reject impoverished of some of its nutritive elements. The better the worms are fed, the worse will the flowers fare. They may often be dislodged by a sudden fright. Perhaps in changing the place of a pot you may give it a slight blow quite unintentionally, and a bright-red tenant, of whose presence you were unaware, will emerge in all haste to escape from fancied danger. Present him immediately as a treat to your gold fish. By tapping the pot or disturbing the earth with a stick the worm will sometimes show his nose above ground. Seize him, and pull him out firmly but gradually; for if he breaks the remaining half will form a new head, and become a perfect worm. If he succeed in drawing himself back unhurt, you will not easily play him the same trick again. Suddenly dosing a pot with quite warm water, but not hot enough to injure the roots, will sometimes make a worm shift his quarters for fear of being scalded the next time of watering. The aphis or fly "our little green brother who lives on the Rose," if a single one be permitted to live, soon multiplies into an annoyance. Fumigating the plants infested, as they stand in your window, is useless except in affording a lady a pretext for permitting, perhaps asking, a gentleman to puff his cigar in her presence. Green fly can be effectually smoked off only in a well-closed greenhouse, or, for want of that, in a large chest in which the plants may be shut up with a little smouldering Tobacco. Branches badly attacked may be smeared, and thereby cleared, with a brush soaked in a strong infusion of Tobacco; but it discolours for a while the shoots to which it is applied, and, moreover, stains fair fingers. Slighter visitations of the insects may be kept down by continually brushing them off with a small clean painter's brush kept for the purpose. Take care, however, that each aphis dislodged has no further chance of rising in the world, and that "when he falls, he falls like Lucifer, never to rise again." For, feeble as he looks, he has sufficient claws and energy to justify the naturalist who referred him to the Hookey-Walker genus. Brown or turtle scale is a still more displeasing insect-pest, to which Orange-trees, Camellias, and even evergreen Ferns are liable, often caught in and brought from infested greenhouses. Therefore when buying such plants, look sharp to see that thay are clean. If you discover that your Orange or Lemon-tree is thus disfigured, paint all its leaves and stems with a mixture of soft soap and Tobacco-juice; wash it off next day with a sponge and tepid water, and watch closely, for some time afterwards, that none of the culprits have escaped to leave behind them lineal descendants. What a heap of trouble! Certainly; but in household horticulture the trouble constitutes part of the pleasure. Gardening operations may have a beginning, but they have no end. A good and hearty cultivator can never say, "I have done now; everything is finished off for the present; there is nothing more to bother me for to-day, to-morrow, or the day after; I can run away for a week or go to sleep for a fortnight." Cultivated plants are insatiable.

Not a few houses (more perhaps in provincial towns than in London) have a back yard, at the bottom of which is some sort of outbuilding—scullery or wash-house—to which the family often go to and fro. By promoting this appendage to the rank of a back or second kitchen and connecting it with the house by a lean-to covered passage with glazed roof and front, in the first place the real kitchen is relieved by an annexe which the mistress can visit and inspect without catching cold; and secondly, the glass corridor will render good service as a greenhouse. The warmth from the house and the back kitchen will keep out ordinary frosts. In summer you may make it as gay as you please with the whole list of conservatory flowers to choose from, and it need not be anything like bare in winter. I have seen excellent Grapes grown in such a passage, whose utility is obvious while its beauty is acknowledged at very first sight. The longer and broader it can be made, the more effective it becomes. —"London Society."

Sculpture and Rock-gardens.—The accompanying beautiful engraving shows the groups of sculpture embowered in the fine piece of rock-gardening at Versailles, in the Bosquet des Bains d'Apollon. It is not for its statuary we are interested in it, but for the rich garlands of vegetation over its rocks. Sculpture has even in gardens a very few noble uses, but few will admire these costly groups—at least as part of any garden scheme; but Ivy and Polypody, trailing shrubs, rock and hardy flowers, that fringe the grottoes for the groups, cover many sins. The rock surface is large and picturesque and well backed by trees. On the whole, it is the most interesting scene in the large gardens of Versailles, and simply because of the living wreaths above alluded to.



Sculpture and Rock-gardens

Floral "Marriage Bells."—At American weddings the bride and bridegroom during the ceremony often stand beneath a bell formed of exquisite flowers. The idea is so pretty that a contemporary recommends it to those who may be busy decorating a church or a house on the occasion of a marriage. No expense or trouble is spared, the choicest blooms being used; and these bells cost sometimes as much as £20. In Denmark, for instance, charming oval wreaths are formed of the long fronds of the Filix-mas Fern, the points meeting at the top, while the stalks are hidden at the base by flowers of vivid colour, contrasting well with the green leaves which seem to spring from them.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Fuchsias.—Where glass accommodation is limited, a little space may be gained by clearing out Fuchsias which have done flowering. In the case of such as are required for future use, the soil should be allowed to get almost dry, and they should be cut back freely, when they may be stowed away under a greenhouse stage, or in any place where they will receive a little light; under such circumstances it is better to keep the soil through the winter half dry, the effect of which will be that the buds will move slightly, but not so as to make much growth, which latter should not be encouraged while they are in a half dark situation; but the advantage gained in not drying them up so as to force them into a totally dormant state, is that when required to be started towards the spring they will move much quicker than when quite dried off. When they have to be wintered in cellars, or any place that is totally dark, the soil must be allowed to get so dry as to cause complete cessation of growth; even if these old plants be not wanted longer for pot culture, it is well to keep them and treat them in the way now recommended, as in the spring, after danger from frost is over, they may be planted out in beds or borders, where they will make a fine display through the summer. The apparently insatiable craving after something fresh in bedding plants has caused Fuchsias to be all but dispensed with; whereas, with the least possible attention, even in indifferent situations, they form the most graceful and continuous blooming subjects that can be grown for summer decoration. Where young plants of them were struck in the summer, as at the time recommended, these are much to be preferred to old ones; but to have them in flower early in spring, this can only be done where means exist for keeping them at a temperature something near 50° at night through the winter. Where they can receive this they must now be placed close to the light, and if the small pots in which they were put when first struck, are full of roots they should be moved to others, an inch or two larger, placing a neat stick to the main stem of each, and if they do not show a disposition to branch freely the points ought to be pinched out in order to induce they to do so.

Chrysanthemums.—Those who have still retained some of the early autumn varieties of Chrysanthemums, a class of plants that unfortunately of late years have been discarded, will, in a season like this, when the later kinds are so unusually late, see the advantage of growing some of them. Where on a south wall there are any means of protecting the late ones with a few loose lights overhead and canvas or mats hung in front during the night time, but taken down during the day, so as to give them the advantage of a full admission of air, they will be much better until the flowers are beginning to open, than if crowded in a plant house. If the buds have not yet been sufficiently thinned, more should at once be removed. Where there is an empty Vinery, in which the leaves are off the Vines, it will prove a suitable place for Chrysanthemums, placing them sufficiently far apart and elevating them on empty inverted pots, so as to get their heads near the glass. Thus situated, they can receive a full complement of air during the day, and also at night, when there is no appearance of frost. They may remain here until they have done flowering, or when in bloom they can be moved to a conservatory or greenhouse.

Solanums.—Where berry-bearing Solanums were planted out and lifted and potted as recommended some weeks back, if they be yet in frames, they must not be set too close together, as when overcrowded, the leaves are almost sure to get injured and fall off, which gives the plants an unsightly appearance; and it will be found much better to discard some than to attempt growing more than there is convenience for. Solanums require a good supply of water; much more, indeed, than most plants cultivated in pots. If they be kept in good healthy condition, they produce a very good effect in the greenhouse intermixed with a front row of dwarf-flowered Chrysanthemums; or a few of their berry-clad branches mixed with Chrysanthemum flowers, and the bright shining leaves of Berberis aquifolium, form lasting materials with which to fill vases.

Cyclamens.—Those who have got a pit or house that can be kept at a temperature of 48° or 50° through the night during the winter season, and have followed the hints given from time to time on the cultivation of these plants, will now have them coming into flower from seed sown fourteen or fifteen months ago; a portion of the earliest may be moved to a greenhouse, where they can occupy a good light position, without which they become drawn, and the flower-stems elongated and weak, with a disposition, in those that are just springing up from the crown, to damp off. Cyclamens that were sown about the end of August, or the beginning of September, must not be allowed to remain in the seed-pans until they are so crowded as to cause the plants to draw up weakly, they should be pricked out 1½ in. apart in pots or pans well drained, and filled with good turfy loam, broken for these young plants small, to which add a fifth or six of leaf-mould and some sand; keep them as near the glass through the winter as means will allow. Cyclamens are subject to green fly, and by those who have not had much experience in gardening it often escapes detection, as it almost invariably confines itself to the under sides of the leaves, a position in which it is difficult to kill by fumigation; I have found dipping in Tobacco water the most effectual remedy.

Lilies.—Lilium eximium that has been kept cool through the spring and flowered late often retains its tops in a green state all through the summer, precluding the possibility of potting, without serious injury, until the present time. The different varieties of L. speciosum, late-flowering plants of auratum and others that have been late in dying down, should now be potted before the young roots have commenced to move, which they do soon after the tops have died down. It is not only necessary to repot in good time when there is division or separation of the bulbs, consequent upon their being too many in a pot, but also when merely larger pots are needed, and nothing further is wanted than removing as much of the old soil as can be got away without injury; this should be done without any hesitation or fear of doing harm by distrubing the old roots, as these, when once the season of growth is completed, never make further progress, but gradually die away, giving place to new fibres which are emitted by the bulbs. These latter, if moving, are extremely sensitive, and should by no means have the old soil they have already penetated removed from them. In the case of large masses of bulbs that have become overcrowded where no young roots have begun to move, it is best to take them out of the soil altogether, putting three, four, or half-a-dozen together according to their kinds, and the size of the pots used, remembering that in all cases the more room they have the stronger they will bloom. Place the bulbs tolerably deep down in the pots, always pressing the soil pretty firm; good, turfy loam, moderately enriched with rotten manure, is best for them; to it must, however be added enough sand to maintain sufficient porosity for the water to penetrate freely, as when in full growth they will require a very large supply; on the other hand, the potting material must not be made too light and open, as the roots like a tolerably close soil; be careful not to use the material in potting in too moist a state, as it would become an adhesive mass, into which the roots could not penetrate freely. After potting, keep the soil through the winter rather dry than moist; if they could be set on an earthern floor, or any absorbent material, the moisture communicated from it through the pots would prevent the necessity for giving much water; such conditions as these are sometimes available under a plant-stage; but, if placed in a position of this kind, care must be taken that the water supplied to the plants on the stage above does not drip on the Lilies, or they will be seriously injured. Wherever wintered, they should not be kept warmer than the temperature of an ordinary greenhouse, for, although such kinds as L. auratum and L. eximium may be had in flower during spring by subjecting them to heat, still the bulbs are much weakened by it.

Flower Garden.—All bedding plants should be now cleared away where any flowering subjects are to be put in the beds, as these may be expected to bloom much better when they are placed in their winter quarters some weeks before the bad weather sets in; if, as advised in the spring, at the time this description of stock was moved to the reserve garden, all that then required division were so treated, they will have made plenty of healthy roots; the comparatively moist season will have favoured them in this respect, and they can be taken up with little injury; the larger the ball, and the less interference with the roots, the better they may be expected to do. Even if the plants are individually larger than requisite, it is not well to divide them at this time, as the season is too far advanced for them to recover the check they would thus receive. As to the description of plants used, it is simply a matter of choice; the tallest growers should, of course, occupy the centres of the beds, as also the most central beds if the flower garden consists of any geometrical design. Nothing is more appropriate or more effective than the different colours of spring-blooming Violas, Red and White Daisies, Aubrietias, and Arabis; in addition to these, any compact-growing, free-blooming plants that flower sufficiently early, so as to make a display for some time previous to the summer occupants being placed in the beds may be used. With such things as the above, bulbs of any description, such as Erythroniums, Tulips, Hyacinths, Crocuses, and Narcissi may be intermixed, giving variety and succession, as well as often producing a more pleasing effect than massing the bulbs alone.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

November 5.—Earthing up French Beans in pots with loam and manure. Grubbing out old Apple trees, and preparing holes for young ones. Getting ice-house cleared out ready for refilling the first opportunity. Getting frames and lights cleared and washed ready for painting before bad weather sets in. Clearing off flower borders and forking up the ground for fresh flowers. Clearing up leaves, &c., in pleasure gro

Nov. 6.—Potting on a batch of Dracænas and Crotons for table decoration. Looking over Calceolaria cuttings and removing any that are damping off, taking off the lights whilst the weather is fine. Hoeing among growing vegetable crops. Taking up and stacking away Salsify and Scorzonera in a cool shed in dry soil. Pears in use for dessert:—Frederic de Wurtemburg, Gansel's Bergamot, and Marie Louise. Looking over Grapes in bottles, cutting out decayed berries, and filling up the bottles where required.

Nov. 7.—Putting early potted Hyacinths into gentle bottom-heat to get them forward. Moving large trees from nursery into pleasure grounds, and planting them in prepared holes. Nailing up Ivy and Roses on walls where blown down by wind. Pruning and nailing Morello Cherries on north walls. Turning over Mushroom manure to sweeten.

Nov. 8.—Sowing Mustard and Cress; also French Beans in pots. Planting out Daisies, Silenes, Myosotis, and Wallflowers. Looking over all Cauliflowers, and turning down leaves where required, to protect them, and removing the forwardest into the shed. Covering up Endive and tying up Lettuces to blanch. Turning over leaves and long manure for making hotbeds.

Nov. 9.—Looking over fruit-room and clearing away fruits that have begun to rot; also looking over seed Potatoes and removing any that are diseased. Washing plants and paint. Roping Onions, and making labels and pegs.

Nov. 10.—Getting tender plants from pits into Vineries, and placing Strawberries in pots into cold pits. Clearing the leaves off the pleasure ground walks, and rolling the gravel down firmly. Weeding Box edging, and cleaning kitchen garden walks. Nailing Fig trees on walls closely, and covering them over with thatched hurdles, to protect them from severe frost. Watering the Pines all through and tying up any that may require it. Fruit in use for dessert:—Pines, Grapes, Pears, Apples, and Nuts.

ON SEX IN FLOWERS.*

By THOMAS MEEHAN.

It will be remembered by those who took part in our Salem meeting, that I there introduced some novel suggestions in regard to the laws of sex in flowers. I then said "that where the reproductive forces are in operation, it is the highest types of vitality only that take on the female form." As the proposition was opposed to current belief I was not surprised that it did not at once receive general assent. Indeed, I myself regarded it as but a provisional hypothesis and said, "I do not urge this view for adoption; my object is to excite investigation by other observers." After the succeeding year I found that not only were my views strengthened by others, but that two distinguished observers, Dr. Spruce, the South American traveller, and Dr. Moore, of Glasnevin, had some just claims to sharing the credit of the discovery with me. At our Troy meeting I endeavoured to advance a step further, and show that it was varying powers of nutrition that probably determined sex. Eight years have now elapsed, and I have met with nothing of my own to lead me to distrust my earlier impressions, and with only one objection in print. Allow me, therefore, to present this proposition to my fellow-students in science as a truth—that the production of a female flower requires a greater expenditure of force than does a male flower. The objections I referred to relate to Indian Corn or Maize, in which male and female flowers often change places, and very often it is in quite weak stalks that grain is found in the tassel; hence, says the objector, vigour has no relation to the female sex. But the vigour intended in the objection—gross vegetable growth—is not the vigour that I mean. I have been always careful to explain that the vital power I mean is the power which shows the greatest hold on life, and this power is often exhibited to a greater degree in a branch of moderate growth than one possessed of great luxuriance. In two branches on a tree exposed to the same severe conditions, we may find one die and the other live. The one which endures has, I apprehend, a higher vital power; and this is the sort of vigour I claim for the female sex. Life is but food transformed, and that which has the greatest power of assimilation will have the highest vital power. In the earliest development of the nucleus it may be either male or female. If it has higher powers of assimilation it finally becomes a female; if lower, a male. Now we shall see that these aberrant cases of Indian Corn really support this view. But I must first remind you that the tassel and ear—the male and female parts of the flower—though so apparently different, are formed on the same plan. If you draw the branches of the tassel upwards closely, you will see that if they were to dorsally unite, and gain succulence, there would be an approach to an ear. But greater vital power was drawn to the ear. It alone had the power to concentrate, consolidate, and build. The male has less vital power; it dies long before the female; its work is sooner done; it has not, in fact, the same vital power. Now, when we find a tassel producing a large amount of grain, we see no (or very little) attempt to form ears on the side of the stalk. The stream of nutrition, usually so great in the female direction, has been turned into the channel usually male, and grain, instead of male flowers, with a considerable union of parts, results. Here are specimens illustrative of this point: in one the male has become so nearly consolidated that only a few barren tips of branchlets remain of its original plan. I consider these Indian Corn examples conclusive as regards my views respecting the origin of the female sex.

Professor Edward D. Cope said the paper just read by Mr. Meehan was one of great value to geologists and botanists alike. He regretted, however, that Mr. Meehan had not gone more into details. He admitted that with the specimens of Indian Corn, as exhibited, a very strong case had been made out, but he was not sure that the facts were not capable of a different explanation. He thought that a difference ought to be made between growth force and reproductive force, as the laws operating in one case were often distinct from those operating in the other.

Mr. Meehan remarked that he had condensed his paper as much as possible in order not to take up time unnecessarily. He recognised the difference suggested by Professor Cope; indeed, he thought the insisting on this distinction was an important part of his own efforts. He thought the paper itself, though, perhaps, too brief for a reading, would be its own witness should it find its way to print, that Professor Cope's objection had been anticipated therein.

BEST TIME FOR FELLING TIMBER.

In alluding to the complaints that are made now-a-days as to the quality of wood employed for building and similar purposes, the "Breslauer Landwirth" remarks that the causes of its inferiority are sufficiently simple, though, unfortunately, but little understood. Most of its faults, such as its tendency to decay and dry-rot, are wholly due to the timber having been felled at improper seasons, and to its subsequent injudicious treatment. To fell trees in March, April, and even in May, as is now often done, is absolute folly. Timber intended for builders, or for the use of coopers and wheelwrights, should never be cut except in December or January, when the circulation of the sap is arrested. November, even, is too early, and February too late to insure its durability. Its subsequent treatment, too, greatly influences the quality of the wood. The tree should be freed from all branches and shoots immediately it is cut down, and sawn into planks as soon as possible, so that these may at once be seasoned by exposure to the air. In this way alone can we obtain wood that will keep well, and every purchaser of timber should insist upon its being prepared in accordance with these directions.—[These remarks are undoubtedly correct in principle, but it would be utterly impossible to cut all the timber that is necessary on a large wooded estate in two or even four months in the year. It would, however, be conferring a boon and a saving to consumers of timber if the producers would make a rule to cut as much timber as possible during the winter months, or say from the end of October to the end of February. It is an indisputable fact that all kinds of timber are more durable, and also less liable to decay and dry-rot, when cut while the sap is comparatively at rest than when cut while it is in active circulation, *i.e.*, when the trees are in leaf. The subsequent management of timber, too, after it is cut, by preventing it from being exposed to extreme moisture and dryness before it is thoroughly seasoned, is scarcely of less importance than the proper season at which to cut it. As a rule, the producer of timber has little or no interest in it after it passes into the hands of the timber merchant, and the latter has perhaps still less regard for durability, so long as he can effect sales with profit; indeed, the less durable timber is, the greater the demand, and, of course, the result is in favour of the timber merchant. It is, therefore, hardly likely that he will trouble himself to inquire whether the timber is cut in winter or summer. The consumer, being the sufferer and most interested party, should buy, so far as is practicable, timber only that has been cut in winter and seasoned. This is the only remedial check that can be suggested to a great evil in woodcraft.—George Berry, *Longleat.*]

ACREAGE OF ORCHARDS, MARKET GARDENS, &c.

According to a Blue Book return, just published, the following is the acreage under orchards, market gardens, nursery grounds, and woods in each county in England, Scotland, and Wales, in 1877:—

Counties.	Orchards, &c.	Market Gardens.	Nursery Grounds.	Woods.
	Acreage of arable or Grass lands, but also used for fruit trees of any kind.	Land used by market gardeners for growth of vegetables and other garden produce.	Land used by nurserymen for growing trees, shrubs, &c.	Coppices or plantations, excepting Gorse land and garden shrubberies.
ENGLAND.	Acres.	Acres.	Acres.	Acres.
Bedford	395	539	10	10,394
Berks	1,422	292	162	30,780
Buckingham	1,627	256	67	24,486
Cambridge	1,377	572	105	5,035
Chester	1,384	893	487	11,921
Cornwall	4,497	977	87	26,374
Cumberland	305	168	190	24,380
Derby	690	452	390	23,406
Devon	24,776	851	333	66,191
Dorset	3,814	147	113	29,388
Durham	197	527	40	21,904
Essex	1,224	4,183	410	29,061
Gloucester	11,965	1,002	209	41,295
Hants	1,173	905	192	87,229
Hereford	24,885	13	134	34,885
Hertford	1,080	219	399	20,714
Huntingdon	242	129	52	2,582
Kent	13,097	3,950	647	78,164
Lancaster	1,974	1,080	334	34,516
Leicester	633	312	187	9,688
Lincoln	1,282	502	138	35,444
Middlesex	3,051	5,119	426	3,174
Monmouth	2,932	171	47	28,584
Norfolk	1,534	992	117	44,251
Northampton	539	286	195	24,142
Northumberland	177	423	95	31,221
Nottingham	1,508	430	182	23,640
Oxford	869	190	98	15,563
Rutland	58	18	10	3.094
Salop	2,944	59	112	39,699
Somerset	20,921	722	211	39,658
Stafford	850	780	222	33,101
Suffolk	1,041	302	97	32,562
Surrey	1,726	1,682	1,519	48,094
Sussex	1,707	871	522	101,331
Warwick	991	408	121	18,529
Westmoreland	211	19	19	15,845
Wilts	2,393	201	103	40,419
Worcester	14,621	1,350	313	16,904
York East Riding	653	412	199	11,357
North Riding	865	312	151	46,020
West Riding	1,465	1,745	536	60,740
Total for England	159,095	34,464	19,961	1,325,765

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* Read before the American Association of Arts and Sciences.

Counties.	Orchards, &c.	Market Gardens.	Nursery Grounds.	Woods.
	Acreage of arable or grass lands, but also used for fruit trees of any kind.	Land used by market gardeners for growth of vegetables and other garden produce.	Land used by nurserymen for growing trees, shrubs, &c.	Coppices or plantations, excepting Gorse land and garden shrubberies.
SCOTLAND.	Acres.	Acres.	Acres.	Acres.
Aberdeen	32	320	199	93,339
Argyle	12	10	12	45,641
Ayr	85	144	103	22,145
Banff	16	3	10	26,190
Berwick	27	38	21	12,919
Bute	—	26	15	3,004
Caithness	6	13	22	440
Clackmannan	9	10	—	2,044
Dumbarton	2	21	—	8,388
Dumfries	47	22	136	27,472
Edinburgh	94	865	382	10,320
Elgin or Moray	30	3	54	45,368
Fife	38	62	35	22,003
Forfar	42	192	116	31,857
Haddington	69	409	11	9,439
Inverness	20	6	59	118,818
Kincardine	—	11	12	23,153
Kinross	—	1	1	3,551
Kirkcudbright	16	2	27	17,346
Lanark	493	177	40	20,862
Linlithgow	10	13	10	4,719
Nairn	9	—	3	14,349
Orkney	1	—	—	—
Shetland...	—	—	—	—
Peebles	—	2	12	9,041
Perth	378	376	74	83,525
Renfrew...	57	146	73	5,461
Ross and Cromarty	2	3	14	33,452
Roxburgh	38	42	77	13,387
Selkirk	3	3	—	2,973
Stirling	35	18	54	11,156
Sutherland	1	—	—	7,296
Wigtown...	4	1	52	4,832
Total for Scotland ...	1,576	2,939	1,624	734,490
WALES.				
Anglesey	7	3	—	1,198
Brecon	859	10	67	9,233
Cardigan	56	8	26	11,257
Carmarthen	112	8	62	15,577
Carnarvon	90	42	30	6,757
Denbigh	190	135	52	13,512
Flint	137	16	13	5,375
Glamorgan	258	194	47	19,864
Merioneth	35	6	10	10,685
Montgomery	337	7	55	18,873
Pembroke	39	17	3	5,969
Radnor	499	—	2	8,523
Total for Wales	2,619	446	367	126,823
Total for Great Britain ...	163,290	37,859	11,952	2,187,078

VEGETARIAN SOCIETY'S ANNUAL MEETING.

This was held at Manchester on the 24th ult.; there was a large attendance both of members and associates, and when it is mentioned that a considerable proportion of these came from remote parts of the United Kingdom, it may be inferred that no slight interest is taken in the Society's proceedings. The report, which was read by the Rev. C. H. Collyns, M.A., was of the most satisfactory character, showing that the area of the Society's operations continues to enlarge itself and its supporters to increase. As regards the latter fact, it may be mentioned that whereas the subscriptions received from contributors in 1870-71 amounted to 125 only, the number for the year 1876-77 was 1458. The income, too, of the Society from all sources indicated the same remarkable development, for whereas in the former year it amounted to £62 8s. 4d., the figures for the latter year are £612 5s. The report is much too long to attempt even a summary here, but the following pertinent observations on the subject of the food supply will have an interest for our readers:—"The food supply has assumed great political significance, and the more extensive growth of fruit continues to be especially called for by considerations of national economy and advantage. It is hoped that the decay of orchards, which has been a painful feature of some counties, may now be arrested, and that the reported increase of area under fruit culture may continue. The present crisis brings into prominence some remarkable facts. That a large part of land admitting of cultivation is still devoted to the production of Barley, Hops, &c., which are afterwards destroyed by conversion into intoxicating drinks, is a fact which has frequently been brought under public attention. That other large portions of our land remain still uncultivated is a matter of equal notoriety. That a further and very considerable area remains under pasture, yielding a minimum of food to the nation's want, employing a minimum of labour, and affording but slight return to the proprietor or cultivator is another fact which, thanks to Mr. Mechi, the world has been often told, and needs to be told again and again. More than ever, therefore, has it become timely to plead, along with the horticultural press, for the wide extension of the industry of fruit culture, from the point of view alike of the artisan, the labourer, the economist, the politician, and the moralist." The report brings into special prominence the exertions, during the year, of the Rev. C. H. Collyns, Mr. Joseph Wilson, and Mr. W. Gibson Ward, and forcibly urges all members of the Society to emulate the intelligent and well-directed efforts of these gentlemen in securing a wider hearing for its benevolent principles. The afternoon meeting, as usual, gave rise to a good deal of discussion upon important features of the movement. The necessity of providing in every large town a vegetarian restaurant was pressed upon the Executive; but as this resolves itself into a question of finance, and is surrounded with elements of difficulty, the subject, for the present, must rest rather in the hands of local societies than with the central management. One enthusiastic adherent to the Society's principles demurred to the restaurant idea, contending that an Apple stall and a baker's shop should suffice any ordinary vegetarian for a decent dinner. The same speaker went so far as to deprecate the idea of "gross feeding" in vegetarianism, and hinted that he had heard that the Society's banquets were not altogether free from the accusation. It was obvious, however, that this gentleman was speaking without the card, and, as was subsequently pointed out to him, with some force, the vegetarian movement is a practical reform, aiming at a change in the dietetic habits of the people, and is not comprised in the questions of upon how much, or upon how little, a vegetarian can make a dinner. The importance of vegetarianism as a therapeutic agent was referred to, and a suggestion thrown out to the Executive to collate and publish in pamphlet form the various extraordinary cases of cure from vegetable diet to be found in the works of Dr. Lambe Graham and in the pages of the "Vegetable Messenger." Mr. Gibson Ward detailed a case of extraordinary recovery from epilepsy under his own immediate care, the patient being placed by Mr. Ward upon a Celery diet. Information was given by several delegates of what was doing to promote vegetarian practice in various parts of the kingdom, notably at Leicester and Liverpool. After tea, the usual public meeting was held, at which the chairman, Mr. W. Gibson Ward, in an able speech, dwelt upon the extreme grossness and impurity of the diet that formerly obtained in England, and quoted from a very old bill of fare of the Corporation of the City of London showing that the porpoise was then eaten as a delicacy. The conclusion to which these remarks tended was that leprosy and the plague with which the people of this country were afflicted, were the natural outcome of such gross and unnatural feeding. Among the speakers who addressed the meeting were Professor F. W. Newman, Rev. C. H. Collyns, Rev. — Molesworth, Rev. W. Clark, and Messrs. Foxcroft, Kingsley, and Skinner. Amongst the Resolutions submitted to the meeting, the following more particularly concerns The Garden:—"That this Meeting invites the attention of all earnest politicians and patriots, and of all holders and occupiers of land, to the importance of the cultivation of fruit as an auxiliary food supply, and urges the planting of suitable fruit trees in all gardens, hedgerows, and waste lands as a profitable, productive, and healthful industry; and in these times of scarcity of food, diseases among cattle, and great national distress, would especially commend to landed proprietors and public corporations—on the grounds of both utility and beauty—the planting of fruit trees along railways, roadways, riverways, and canalways, and in hedgerows wherever practicable."

Kew, Syon, and Chatsworth Conservatories.—In speaking of these conservatories in The Garden of Sept. 15 (p. 246), their relative sizes are given as follows:—Kew 24,000, Syon 7785, and Chatsworth 15,276 square ft., whereas Chatsworth contains 1,131,596 square ft., and I cannot help thinking that the conservatories at both Kew and Syon are larger than your correspondent has stated. Chatsworth conservatory is 276 ft. by 123 ft., and the height is 67 ft.; the span of the transept is 70 ft. There are two rows of metal columns 28 ft. high, from which the span springs. The cubic contents of the transept are 457,729 ft.; the central part, inside the columns, 376,320 ft.; bottom roof to the columns, 317,547 ft.=1,131,596 ft. There are 70,000 square ft. of glass in the roof. It is heated by hot-water pipes in combination with flues. The hot-water pipes, 5½ in. bore, if placed in a continuous line, would extend six miles. I am of opinion that a judicious combination of flues and hot-water pipes is the most economical mode of heating, as I have long been convinced that more heat is utilized by this than by any other mode of warming; for, use what boiler you will, the heat leaves the boiler at as high a temperature as the water in the boiler at the time of its exit, and by passing it into a flue round the house you utilize instead of wasting it up the chimney. This is all clear gain, and will more than compensate for the extra outlay in making the flues, &c. That this is a most economical way of heating will be admitted when I say that we have only here two 12 ft. saddle boilers, one 8 ft., and an old 6 ft. tubular boiler that has been in use twenty years, and this is only used in very severe weather. But with the first three named we can usually command a temperature of from 48° to 50° at night, and without the flues we should doubtless require much more boiler power than we have.—Thomas Speed, *Chatsworth.*

Flowering of Chamærops Fortunei at Alderley.—This species, indigenous in Japan, is the most hardy of all the Palms. I find that several have flowered in the open air in the neighbourhood of London without any protection; but for it to flower so far north as Manchester is probably very uncommon, though I hear it has done so at York. The plant in question has stood out-of-doors about twenty-five years, and has never been covered up in winter. It is about 6 ft. high, and has always seemed very healthy; but this summer, for the first time, it threw out a racemose male flower. The position is well sheltered from east and north winds; indeed, the garden generally is extremely well protected. The species of Chamærops have a special interest from having been found fossil in the Miocene of Europe, and even in very high Asiatic latitudes. Besides C. Fortunei, both C. excelsa and humilis are common in England in cultivation. C. excelsa is only half hardy, and requires protection in winter; C. humilis is a South European species, but flourishes out-of-doors at Osborne, though it requires protection in the shape of matting in cold weather. All the kinds of Chamærops grow in temperatures comparatively low when compared with that required by other Palms. According to Hooker, Chamærops martiana grows at 8000 ft. in the West Himalayas, where they are annually covered with snow.—"Proceedings of the Manchester Philosophical Society."

Plant Cures for Hydrophobia.—A Fellow of the Royal College of Physicians writes, in reference to this subject, as follows:—"Some of the correspondence on hydrophobia is so likely to excite vain hopes in the public mind that it becomes a duty to call attention to the following facts. The Datura Stramonium, a plant belonging to the Natural Order Atropaceæ, is familiar to every member of the medical profession in this country; indeed it is included in our national pharmacopœia. Its properties are due to the presence of an alkaloid, daturia, and have been thoroughly investigated. They resemble those of the Deadly Nightshade (Atropa Belladonna) in kind, though not in degree. Far from exciting profuse perspiration, daturia would rather tend to check it. Even if it were a sudorific, this would not, as some appear to imagine, increase the likelihood of its curing hydrophobia. The truth is, and it cannot be too generally recognised, that all the resources of the 'Materia Medica' have long since been tried, and tried in vain, against this terrible disease. There is no evidence worth a jot to prove that a single case has ever been cured, either in man or in one of the lower animals. A new remedy starts into notice every year; it sinks into discredit even before another is ready to take its place. The last of these claimants is the Xanthium spinosum, a plant which grows abundantly in Southern Russia, where hydrophobia is common. It was introduced to the notice of Prof. Gubler, of Paris, by Dr. Grzymala, of Podolia, and excited some attention from the mass of evidence adduced on its behalf. But careful experiments (made, I believe, at the Veterinary School of Alfort) soon dismissed it to the limbo where its predecessors lie forgotten."

Magnolia Campbelli in Ireland.—We forget how long it is since this Magnolia, a mere stripling, was planted out at Lakelands, Co. Cork, but little more, we should think, than six or seven years. So rapid has been its growth, that when we saw it this autumn it was quite a tree, and, in its noble leafage and aspect, one of the most imposing we have ever met with. Merely regarded as a deciduous tree of fine proportions and faultless symmetry, and in its summer clothing decked with foliage exceptionally large and fine, the Lakelands specimen speaks forcibly of its value. But what, if in addition to this beauty of form and leafage, we take into account that in spring, before the leaves appear, it is the wont of Magnolia Campbelli to have its every branchlet decked with glorious cupped flowers, measuring from 6 in. to 10 in. across, varying in colour from white to deep rose or crimson, and exhaling an agreeable fragrance! The Lakelands specimen has not yet flowered, but it will not be very long now, we apprehend, till it will afford the first opportunity of recording its flowering in these islands. We have heard doubts expressed, and read of them, too, from time to time, as to this Magnolia being sufficiently hardy for our climate, and this may in some measure account for it being yet so rare in our grounds. Is there any valid ground for the supposition? We rather think not, taking into account that its home is among the outer ranges of the Sikkim Himalayas, where it is found, according to Sir Joseph Hooker, in abundance as a great forest tree at an elevation of from 8000 to 10,000 ft., and further, that more than twenty years ago Sir Joseph did not hesitate to express his undoubted conviction that it would "prove hardy in England." Our own experience of its behaviour out-of-doors in this country goes a good way to show he was right in forming that opinion. With regard to soil and situation, it must be remembered that, unlike some of its American congeners, its home is the mountain side, not the oozy river bank or lagoon islet. We throw out the hint merely to suggest the probability of a somewhat open and elevated situation, and a lively soil, rich withal in vegetable matter, being more favourable to its wood ripening and early flowering than if planted in low and closely sheltered quarters, with a peaty or heavy soil to grow in. Those who have facilities for doing so would do well to put this matter to the test by planting one or more in these different situations. The Lakelands specimen is admittedly growing in a rather close and sheltered spot in companionship with an almost equally large example of Idesia polycarpa.—"Irish Farmers' Gazette."

Preserving Fence Posts.—There are paints, washes, and heterogenous steeps recommended for preserving posts, but each are comparatively costly, and only partially successful. One great objection to the application of solutions externally rests on the fact that the sap, being confined, accelerates decomposition in the interior. Most foresters must have observed this. What I would recommend with fencing posts is that the materials, when felled be directly sawn into posts and stored under sheds thoroughly ventilated, where they will remain at least a year exposed to sun and wind. The neck, or part between wind and water, of each post should be slowly charred over a strong fire—slowly, because our principle means heating the timber thoroughly to the heart, so as to extract any moisture which may be still lodged at the centre, and hardening a crust on the surface of the posts. Afterwards, to prevent the posts absorbing water, they should be well coated with coal tar, having its acid destroyed with fresh quicklime. The tar should be thoroughly boiled to evaporate all watery matter, and applied boiling hot. A large tank holding the posts set on end, and filled with the scalding tar from a boiler, answers the purpose very well. Of course the upper half of the posts can be painted when placed *in situ*. I am convinced that coal tar, properly applied to thoroughly seasoned timber, is far more effectual in preserving posts than creosoting or kyanising.—"Journal of Forestry."

NOTES AND QUESTIONS—VARIOUS.

Coloured Vine Leaves.—These ought to be made serviceable for decorative purposes, such as harvest festivals, or for churches. Amongst them are lemon-yellows, orange, claret, and deep red with veins of orange, all of which produce a gorgeous effect.—J. Peed, *Norwood.*

Propagating the Virginian Creeper.—What is the best method of propagating the Virginian Creeper? I have tried cuttings of the variety called Ampelopsis Veitchi, and have not been successful.—M. H. [Ampelopsis Veitchi (or cuspidata) is easily increased by cuttings or layer; the cuttings may be put in at this season.]

Euonymus japonica in London.—This, together with its various varieties, is probably the most useful evergreen yet brought to our gardens. To sea breezes or London smoke it seems to have, of all plants, the least repugnance. A collection of the variegated forms of it, planted alternately against one of the low walls in Mr. Wimsett's nursery, in the Kings Road, is now very attractive. The foliage looks as bright and fresh as that of evergreens in country gardens. All the varieties make admirable wall plants.

Substitute for Farm-yard Manure.—I have a garden into which it is very difficult to get farm-yard manure. Could artificial manure be used instead for the growth of vegetables, small fruits, and Grapes? and, if so, which sort and how much should I use, and when should I apply it?—K.

Pelargonium Pioneer.—We find this to be a capital variety for late autumn blooming—in fact the best in a collection of some scores of varieties. Small plants of it in 6 in. pots are now each producing from eight to twelve large trusses of beautiful magenta-scarlet flowers. The plants were struck last autumn, and potted into their blooming pots in June. During the summer they were grown in a cold pit, the light only being put over them to throw off excessive rains. They were put in a warm light greenhouse three weeks ago; for making a front row to a bank of Chrysanthemums they answer admirably.—H. J. C., *Grimston,*

Tawdry Splendour.—An unfortunate gentleman in the north-western district, not content with one or two of the mirror-globes of the French gardens, has made himself an avenue of them of various colours. Each huge globe reposes in a vase, and the avenue, from the gate to the house, is bordered on each side by a line of the mirrors. The effect is as good as could be desired for a Shoreditch theatre.

Mr. Legg, late gardener at Clapham Park has, it is said, been appointed to take charge of the Duke of Lienster's garden at Carton. If good gardening justifies such an appointment, nobody who knows Mr. Legg's work will doubt his fitness for this, one of the most important of Irish Gardens.

No. 312.] SATURDAY, NOVEMBER 10, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

THE REDWOOD IN ENGLAND.

MR. SYME states, in his interesting notice of this tree (see p. 295), "that it has not done very well in this country except in a few favoured localities in which shelter from cutting winds is afforded." This is true, no doubt, to a certain extent, especially in the northern counties of England and Scotland, but it can hardly be applied to the southern and western counties of England; neither can it apply to Ireland, for there this tree grows most luxuriantly; the humid climate there, and the deep soil, full of vegetable matter, are just what it delights in, and I think it is the place of all others to plant it exclusively with a view to produce timber, and where colossal butts of it may be anticipated in the future. My opinion of this tree is that it will prove to be the fastest producer of timber amongst all the Conifers, the Sequoia gigantea not excepted. The latter will probably grow to a greater height, as it is not so liable to lose its leading shoots by rough winds as the S. sempervirens is; but it is not likely to make so bulky a butt of timber, as its stem tapers more rapidly. I base my opinion on observation of several specimens growing in the south of England. Let me now mention a few of the largest specimens of Sequoia sempervirens with which I am acquainted, in order to show what rapid growth this tree has made since it was brought to this country in 1843, for such was the date of its importation, though it was probably not generally introduced into commerce until 1845 or 1846. At Bowood there is a specimen remarkable for its large girth of stem; it measures in circumference, at 5 ft. above the ground, 8 ft. 7 in., and contains, probably, about 80 ft. of timber. At Hatfield I measured a beautiful specimen recently; it girthed 8 ft. 6 in. at 5 ft. up the stem, and its height is fully 60 ft. At Strathfieldsaye, Mr. Bell informs me that the largest tree there is 62 ft. high, and girths, at 5 ft. in height, 6 ft. 1 in. At Mells Park, Somerset, there is a good specimen 54 ft. high, clear of branches for about one-third its height; the stem carries its girth well up to near the top, the girth of which, at 5 ft. up, is 5 ft. 10 in. The best tree which we have at Longleat is growing in a deep black vegetable soil on the Oxford clay; it has not quite so large a girth of stem as the two largest mentioned above, but it is one of the highest and best specimens in this country. The situation in which it is growing is sheltered on the side of the prevailing winds. I may mention that the site occupied by this tree is a portion of the pleasure-ground; in 1845, it formed part of an Oak coppice, from which the trees and underwood were grubbed out in the winters of 1846 and 1847. This tree, with several others, amongst which was the Dacrydium (see p. 405), was planted in this newly-grubbed ground during the following winter of 1848 or the spring of 1849; it is now 62 ft. high; it measured 63 ft. high last year, but, unfortunately, during last winter its leader was broken off by a gale of wind; the girth of its stem at 5 ft. up is just 8 ft., having increased 1 ft. in circumference of stem since it was measured last winter; the cubic contents of timber in the butt, exclusive of bark, are 73 ft. There are several other specimens of Redwood here in perfect health and growing vigorously; some are planted in thin, poor, green-sand soils in a plantation, but they are doing so well that they are keeping pace with the Larch of the same age and time of planting. There is no doubt that this tree succeeds best and grows most rapidly in deep, moist soils, and when protected from rough winds, like all other fast-growing Conifers; but, at the same time, I maintain that in the south and west of England and Ireland it will thrive in almost any situation; on the other hand, I have seen it in the North Riding of Yorkshire present a miserable appearance, so battered and disfigured by storms that one could scarcely recognise it; so much does difference of locality affect trees. The heart-wood of the Sequoia sempervirens will, I think, prove valuable for furniture-making and for other constructive industries, where a richly-coloured, fine-grained wood is essential; it is also susceptible of high polish. I have in my possession a piece of the stem of this tree, about 6 in. in diameter; the heart-wood is of a reddish colour, close and fine-grained, while the sapwood is white, soft, and probably not durable, and of little value.

Longleat. GEORGE BERRY.

Commemoration Trees.—At a recent party at Eridge, some of the guests (we learn from the papers) planted commemoration trees. "On Tuesday, the company assembled in the north Pinetum, to plant commemoration trees. The Premier planted a Picea nobilis, from California, and the Lord Chancellor planted a Picea Lowi, also a fine specimen of the Silver Fir. Mr. Hardy's tree was the Japan Spruce. Sir W. H. Dyke planted a magnificent Douglas Fir, a tree which attains over 300 ft. in height." If they had planted a group of the best varieties of the British Oaks, or even a group of Hawthorns, these trees would be very much more likely to be commemorative. It does not show much real knowledge of trees, and the conditions under which they each attain perfection, to plant avenues of the Californian ones in country seats in all sorts of positions; but as commemorative trees, many fashionable Conifers are still more unfitted.

The Weeping Hemlock Spruce.—The "American Agriculturist" publishes a figure of this, which we imagine does not do justice to the plant. The most beautiful of American evergreens, the Hemlock, has produced several interesting forms. The Small-leaved Hemlock (Abies canadensis microphylla) has very small foliage, while the Large-leaved kind (called macrophylla) runs to the opposite extreme. There are one or two very dwarf forms, but the most beautiful of all is the Weeping Hemlock (Abies canadensis pendula). This variety has its branches positively pendulous, even the leading shoot bending over upon itself. This has been grafted upon tall stocks; but, so treated, it is not satisfactory, the trees being far inferior in beauty to those in which the branches start from the base. This form was discovered, if we mistake not, near Fishkill-on-the-Hudson, by Mr. Sargent, and is now in the hands of Messrs. Parsons & Sons, at whose nursery, at Flushing, we saw some fine specimens.

Tree-felling by Electricity.—The patentees of this process are Mr. H. Hope Parkinson and Mr. W. H. Martin, both of Bombay. The plan is simple enough. The two ends of the copper wires of a galvanic battery are connected with platinum wire, which, of course, instantly becomes red hot, and while in that state, it is gently see-sawed across the trunk of the tree to be felled. The plan was tried the other day by way of experiment, but it turned out that the thickness of the thickest wire that could be got was that of a crochet-cotton. It was, therefore, at once seen that a wire of such thinness would be consumed before the tree was half severed from its trunk. However, the attempt was made. The burning wire performed its task very well so long as it lasted, but, as was anticipated, it continually broke, and at length there was no wire left. There can be little doubt that with a stronger battery—the one used was only a twelve-chambered one—and a thicker wire, the experiment would have been entirely successful. As it was, the tree was sawn one-fifth through. It is calculated that under proper conditions a tree, which at present takes two hours to fell, will come to the ground by this process in fifteen minutes. It is almost needless to add that there is no waste of wood, no sawdust. The process is one worth the attention of all persons engaged on forest clearing.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

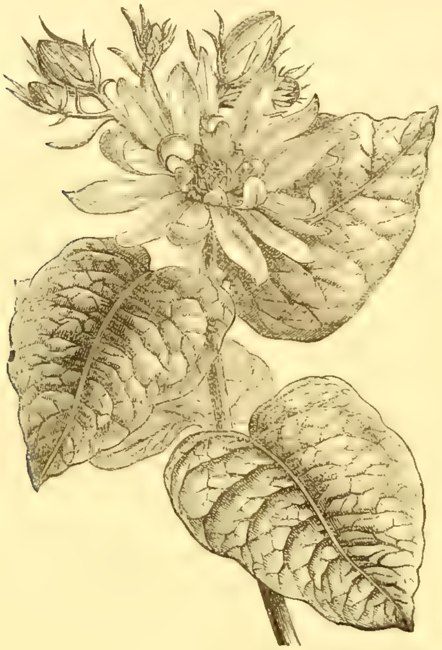
Hardy Smilaxes.—Little attention seems to be paid to the hardy species of Smilax. Several species, however, thrive freely on good warm soils with us, and are quite distinct in habit from anything else we have. They are also handsome, and most suitable for walls, banks, or for trailing over a low stump. We saw an effective group of them in the Cambridge Botanic Garden a few days ago.

Fir Trees in a Northern Aspect.—So much does a cold situation influence the growth of the Fir, that trees grown on the northern side of a hill are superior to those grown on the southern side.—"Family Herald." [Just so; trees on a northern aspect grow less rapidly than those on the sunny side of a hill. The timber on the former would be, as a rule, more durable than that grown on the latter, and the trees would not be so liable to injury from frosts; indeed, many diseases are induced, perhaps aggravated, by the sap being checked during early spring, on a south or south-eastern aspect.—G. B.]

THE WESTERN ALLSPICE

(CALYCANTHUS OCCIDENTALIS).

THIS is rather tender for the open border in the neighbourhood of London, but it makes a fine plant for training against a south wall, where it flowers freely during the summer and autumn. It forms a robust deciduous shrub, 5 ft. high, with large, broadly-ovate leaves, pointed and rounded at the base, downy on the midribs on the under sides, smooth on the upper surfaces, entire on the edges, and on rather long foot-stalks. The flowers, which are somewhat large, are terminal, solitary, or clustered on stout foot-stalks, and of a deep lurid purple, the calyx and petals being of the same colour, and nearly scentless. The wood and leaves have the same aromatic scent as the other species of Allspice. It is a native of the Sacramento Mountains in California, and was first introduced by Hartweg, who gave it the name of C. macrophylla.



Calycanthus occidentalis.

GEORGE GORDON.

TREES IN GRAVEYARDS.

A MATTER of some interest to horticulturists recently came up for discussion by the Southampton Town Council upon the complaint of a lady that the roots of a certain tree had penetrated into, and were greatly damaging, the brickwork of the vault in the cemetery containing the body of her husband, some twenty years deceased, and she applied that the tree should be removed. As the tree in question was a very ornamental Weeping Birch, some 30 ft. in height, the Council declined to agree to this suggestion. A dispute of this kind naturally opens up the somewhat important question of the planting of trees in graveyards to be recommended, seeing that, however ornamental they may appear at first, or may ultimately become, it is just possible that if due care be not exercised such complaints as that mentioned above may be of frequent occurrence. In this case it was contended that if a site for a vault or grave be selected so near to a growing tree as that in question, the result that now followed must, at some time or other, be inevitably looked for; but it was afterwards shown that the tree was not planted until after the vault had been made, and therefore the lady had a fair cause for complaint. That trees should be found in graveyards who can doubt, but that they should consist of giant forest trees—Elms, Oaks, Beech, Scotch and Spruce Firs, Larch, &c.—no one will maintain. Ornamental trees, or such as are strictly in keeping with the surroundings, might well be planted, and not too sparingly, in a newly-enclosed space that was previously devoid of trees, because the nakedness thus displayed renders the graveyard repugnant to the relatives of those buried there; but it should be a matter of careful adjustment in the planting, that as the trees develop a gradual thinning should take place, a gloomy grove of overgrowth being as bad on the one hand as comparative nakedness on the other. To many there is a strong attraction towards the vicinity of a tree as a burial-place, and if it be intended to be a humble grave, that may remain again unopened for a long term of years, a tree can hardly prove objectionable. It is, however, possible that in digging such a grave some main root of the tree may have to be severed and considerable harm done to it, or if that does not follow, the severing of the roots will but produce, when the excavated soil is replaced in the grave, a perfect mass of small rootlets, and these will take possession of the disturbed soil, rendering it specially difficult to re-excavate at any other time. The lady in question, however, had an additional complaint to make, viz., that the sap exuded from the leaves of the overhanging tree was washed down upon the stonework below, and so much discoloured it as to make it the reverse of ornamental; thus it is seen that evils which can only be cured by the elastic remedy of cutting down some beautiful tree will follow upon the placing of vaults and graves in too close proximity to trees; and perchance the relatives, who have been at considerable expense in the raising of memorials over their dead, will come to wish that they had not courted the vicinity of trees at a time when it was not too late to alter the position. In some not well-governed graveyards it is the practice to allow relatives to plant memorial trees at the head and foot of graves, and as these, though small when planted, inevitably grow into size, the graveyard eventually assumes a nondescript appearance, as there is neither plan, taste, or arrangement to be seen. Flowers in abundance may well be invited, but the planting of trees by such persons should be strictly prohibited. Flowering plants, Ivies, hardy Creepers of various kinds, the beautiful varieties of Clematis especially, might well be used to cover graves, instead of the grass that is ever untidy, or the expensive stone that soon discolours and decays.

A. D.

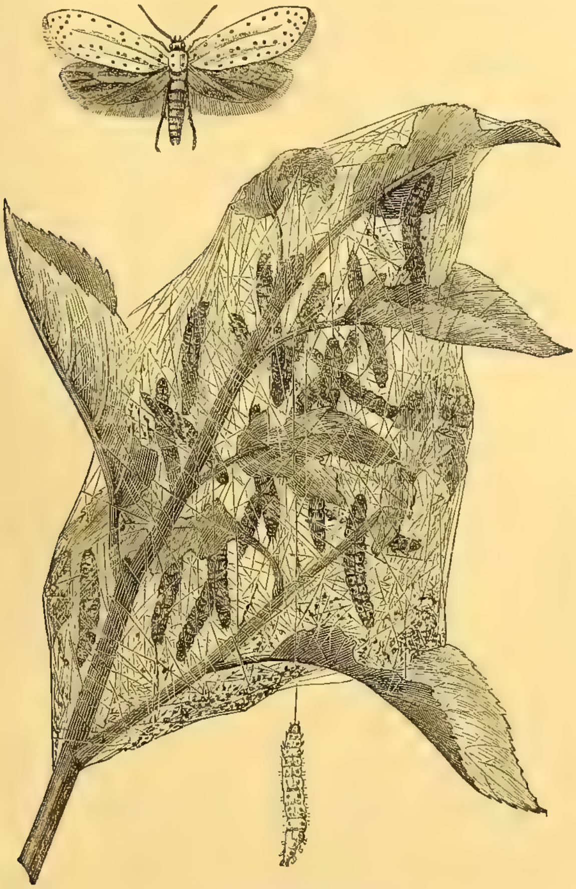
Anti-malarial Properties of Eucalyptus.—On this subject Prof. Bentley says that "the evidence that has been adduced from Australia, the native country of the Eucalyptus, and from all parts of the world where it has been introduced, and which are favourable to its growth, in testimony of its anti-malarial properties, is so strong, that, allowing for exaggeration in some cases, it can scarcely be doubted that this tree does produce a most beneficial effect by destroying the fever-producing miasm of marshy districts; and that it should consequently be introduced into all countries and districts where the climatic influences are favourable for its development, and where such miasmatic emanations are to be found." Special interest (says "Nature") attaches to the introduction of the Blue Gum Tree into Italy for this purpose, and it is confidently hoped that by its means the problem may at length be solved of destroying the noxious malaria which has in recent times rendered the level country round Rome so unhealthy in the summer season. The mode in which the trees act in influencing the climate is open to controversy. The popular idea is that the efficient cause is the odorous and antiseptic emanations from the leaves. It is quite likely that some influence is exerted in this way, but it seems most probable that the chief effect produced is by the action of the roots on the soil. This function of trees is often greatly overlooked. The effect of the planting of forests in decreasing the rainfall is frequently erroneously stated to be due to the attractive force of the trees on the moisture in the air, similar to that exerted by a range of mountains; but it is difficult to conceive that the small mass of the entire foliage of a forest can exert any appreciable influence in this direction. The mode in which trees mainly act is by their roots arresting the rainfall, which would otherwise escape by the natural drainage of the country; the combined forces of capillarity, osmose, and transpiration then cause the ascent through the tissues of the tree of the water thus arrested, and the larger portion is eventually given off into the air through the stomata of the leaves. In this way a forest tree will, in a very short time, give off into the air its own weight in water, which must eventually condense, and be again deposited as rain or dew. It is quite possible, however, that the effect of the planting of trees may be apparently the reverse of this in swampy countries, where there is no natural drainage.

Bedding Out.—Mr. Punch offers a humble suggestion to the authorities who are about to beautify the Bayswater side of Hyde Park. If beds of flowers are to be made up, will the bed-makers be good enough to allow them to look somewhat like old-fashioned parterres, whereas those on the Park Lane side resemble nothing so much as lobster salads and open tarts. "Hear, Nature, hear our prayer! Dear goddess, hear."

AN ENEMY TO FRUIT TREES.

(YPONOMEUTA COGNATELLA.)

One of the causes, although by no means the only or the chief one, which have contributed to make the fruit crop this season so scarce and dear, has been the attacks of the small moth, Yponomeuta cognatella, which is figured in the accompanying woodcut. All Londoners are familiar with the work of its ally, Yponomeuta padella, the larvæ of which envelop the young shoots of the Hawthorn hedges in spring with its unsightly webs. The larvæ of Y. cognatella does not force its webs quite so obtrusively upon our attention, which is partly due to its preferring the Apple and similar food plants, which are not so universally grown as the Hawthorn, and partly, of course, to the much greater multitude of the Hawthorn grown as hedges than the single plants of any kindred species. The reader may not see miles of hedges denuded by the larvæ of Y. cognatella, and blackened by its *débris*, as he must often do in the neighbourhood of London by Y. padella; but he will see plenty of single plants of fruit trees every spring terribly injured by this species. For many years past it has been a severe scourge in the neighbourhood of London and in many other parts, and has, no doubt, contributed very materially to the loss sustained by the market gardener during the present year. The moth slightly resembles Yponomeuta padella, but its upper wings are entirely of a pure white, without the least bit of a lead colour; they also are marked with about twenty-five small black dots. It is hatched at the same time, and the caterpillar has the same habits; it lives upon the Apple tree, and sometimes upon the Hawthorn and Service tree, never upon other trees. When it is quite young, in the beginning of May, the larva is of a yellowish-white, with little raised blackish spots; the head and the flat part of the first segment are of a blackish-brown. When it is full grown, at the end of June, it is of a velvety-grey, with two dorsal rows of quadrangular spots of a deep black. The head, the flat part of the first segment, and the scaly feet are of a dull black. After this caterpillar has established itself on the orchards or rows of fruit trees it gives them the appearance of having the leaves burnt, and the branches enveloped in a net-work of white silk, resembling at a distance innumerable spiders' webs, by which the whole tree seems to be invaded, and all hope of a crop annihilated.



Yponomeuta cognatella.

Andrew Murray.

Propagating Harrison's Musk (Mimulus moschatus Harrisoni).—Those who wish to get a good stock of this Musk, and have only a few plants, should adopt the following method, which I have practised with success, namely:—Take all the points of the shoots off the old plants at the third or fourth joint; these should be cut again at the second joint, put into 3-in. pots, and plunged in bottom-heat. That portion which is cut off the cutting should be treated as follows:—Remove each leaf with a "heel," and dibble them into a compost of leaf-mould and sand, when they will readily strike root. I had two plants by post about six weeks ago, and I have now struck three dozen and a half by the method I have just indicated; not one has failed.—T. W. S.

Plants Fed or Injured.—Cultivators have probably much yet to learn with respect to the safe and profitable application of particular manures to particular crops. Every carefully-conducted experiment tends to show that it would be almost as absurd to attempt to feed all animals on the same food as to attempt to nourish all plants on the same manure. It is often said that "What is food for one is poison for another," and the same may be said with equal truth respecting the vegetable world. The fact has never yet received the attention which its importance merits. Dr. Gustav Mark has lately been showing this in a way that may be commended to the notice of all concerned in the subject, more particularly as the plant experimented upon is one universally known, and all but universally cultivated. He set apart a plot of the common Kidney Bean and left it unmanured, and he selected other plots for treatment with kainit, nitrate of soda, bone dust, superphosphate, gypsum, guano, and farmyard refuse respectively. Of those various foods, he says that bone dust proved most nutritious, the crops supplied with it having been by far the heaviest. Next in value to bone dust was superphosphate. But the most important fact announced by Dr. Mark is that some of the manures tried not only failed to produce any increase of crops, but proved positively mischievous. Thus for many crops guano, one of the richest and most valuable forms of manure, proved worse than nothing, and the same was the case with farmyard manure, another material which few persons would hesitate to apply indiscriminately to any crop they wished to improve. The yield of Beans under the influence of both guano and farm refuse, as well as that of guano with bone dust, kainit with nitrate of soda, and kainit with gypsum, proved worse than the plot left entirely unmanured. Of course no one will find anything new in this; but there are many who are seriously interested in the subject to whom authoritative experiments of this kind cannot but prove useful.—"Globe."

Over-Decoration.—The external decoration of buildings has been overdone since the Gothic revival; as much carved foliage, for instance, is often found on a modern hotel as would have sufficed for half-a-dozen Mediæval cathedrals. It is the natural tendency of revivals to go to excess in the use of things good in themselves, and this kind of excess in decoration, which in external architecture people are beginning to recognise as a mistake, and as involving a certain degree of bad taste, seems to be now extending itself to interior decoration. It is not sufficiently borne in mind that one of the great sources of decorative effect is contrast; not only contrast of colour, but contrast between plain surfaces and decorated surfaces. At present there seems to be too great a tendency to make every available surface throughout a house an occasion for decoration of a more or less elaborate description; to let nothing alone. There is a sense of a profusion about a house thus treated which is rich in effect, no doubt, but which also becomes a little cloying to the eye and the mind. We find in a dwelling thus treated designs on the window-glass, and over all the walls and ceilings of every room; the doors have conventional vegetation in bright colours over-running the panels; decorative carpets are on the floors, of many hues; decorative china is placed in every available place; and each piece of furniture constitutes a separate study in decoration. The result is not unfrequently to produce a spotty effect and a want of repose which is at variance with the best taste in decoration.—"Builder."

Michaelmas Daisies.—Among the many kinds of these ornamental autumn-flowering Asters, few are more graceful in habit than A. pendulus and A. ericoides. Isolated in light open places, these two kinds are now very attractive. The flowers are, of course, much inferior to such kinds as A. Amellus, which is now in bloom, but this loss is amply substituted by the profusion in which they are produced, as well as their longevity.

NOTES OF THE WEEK.

Pomegranates.—Of these often mawkish fruits there are now some of good flavour in Covent Garden—the well-browned sound fruit—sometimes suggesting what the fruit may be when in perfection in the warm south.

Bomarea Carderi.—A large specimen of this comparatively new plant, in Mr. Bull's nursery, has been yielding a succession of flowers ever since July last, and now bears large trusses of pendent pink blossoms. For planting out in a cool house, to cover walls or rafters, this Bomarea will, therefore, be found valuable; and it also makes a good pot plant.—S.

Epiphyllums in Winter.—Few plants are more effective at this season than are the many varieties of Epiphyllum, all of which are plants which any one having a warm house can grow. Grafted standard high, or in the form of pyramids, they are equally interesting. Grafted on stocks about 6 in. high, they droop over the pots, and form excellent plants for vases for room decoration.

Lady Henniker Apple.—We have lately had an opportunity of seeing in Messrs. Ewing's well-cultivated and well-stored Nurseries at Norwich, good specimens of this cooking Apple, which merits all that has been said of it. It is a handsome and large fruit, with a fine acidulous flavour, and, numerous as are the varieties of kitchen Apples, deserves a place among the best.—H.

Two Well-flowered Orchids.—At the meeting of the Royal Horticultural Society, on Tuesday last, Sir Trevor Lawrence showed one of the best examples of Oncidium crispum which we have seen this season. The plant, which was growing in a wooden, upright basket, bore six flower-spikes, each furnished with no fewer than forty-six richly-coloured chocolate flowers. Associated with this was a Vanda cœrulea, from Mr. Smith, Henley-on-Thames, with two stems, each bearing three flower-spikes, the blossoms on which numbered in all eighty-nine, and these were very large, and of a rich, dazzling blue colour.—S.

A Useful Berry-bearing Plant.—Seldom do we see the orange-fruited Physalis Alkekengi well grown in our gardens, and yet it is one of the most ornamental of berry-bearing plants. It is used to some extent in one of the London parks as a shrubbery edging, but in such positions the leafy bladder, in which the fruit is enclosed does not assume that rich orange colour which forms the chief merit of the plant. In sunny places, in good soil, the berries become very large and ripen perfectly, and if, when the leaves have died off, the stalks be hung up in any dry airy place, the bladder-enveloped berries will keep sound and form useful material for Christmas decorations. Grown in pots, this plant will also be useful for winter decoration. By some the seeds are supposed to be poisonous, but we are told that in Arabia, Germany, and Spain the fruits, which have a slightly acid taste, are eaten.

Market Garden Notes.—All winter greens and roots promise to be as abundant as Potates promise to be scarce. With such a wealty of winter greens, Turnips, Parsnips, and Carrots, it might reasonably be expected that Potatoes would not realise very high prices, but it is a fact that the consumer regards Potatoes as second only to bread, and will not be without them for the mid-day meal if it be possible to obtain them. Great as are the breadths of Potatoes grown, a thoroughly healthy crop would only suffice to satisfy the usual demand for this valuable esculent. When, therefore, a grower in a large way says of his crop that he is lifting daily more bad ones than good, it is evident that only a very high price can recoup him or keep the demand in anything like reasonable check. The white Turnip crop is most abundant, and the bulbs being of quick growth, are excellent in quality. Of course, the Turnip cannot in any way be put into competition with the Potato as an article of diet, but it is a delicious vegetable at all times, and specially so from the 1st of September to the end of the year. No greater mistake can be made than to grow Turnips to a large size. Small and sweet, large and coarse, is exactly the characteristic of the Turnip. As a rule, growers thin out too much, whilst if left thick the plant would bulb sooner, and instead of putting some half dozen big ones in a bunch, they could put twelve of medium size that would be far more delicious eating, and be ready for market at least a fortnight earlier. The first one or two pullings would give the remainder all the room they require, and this would save much labour and expense in hoeing and thinning. The summer rains and the abundance of moisture that has since prevailed have produced a luxuriant growth in winter greens, and growers begin to bewail their great abundance. Of Coleworts, one of the earliest of market greens, immense breadths have been put out, and they must be sold at some price or other. Small as the amount often is paid to the grower, it, however, becomes a high one ere it reaches the consumer, and so it will continue until the grower brings his produce more immediately before his best customers. A neighbour recently said, that having been foolish enough to decline 9d. per bushel on the road to town for small cabbage heads he found when he got there that he could only get 4d. per bushel for them. Yet these would be retailed out at about 2s. per bushel, or even more. White and purple sprouting Broccoli, Brussels Sprouts, Savoys, and other Cabbages, Coleworts, and Scotch Kale form the staple winter green crops of our market fields; winter Spinach also forming a valuable and invariably a paying crop. All of these products, with Turnips, Parsnips, Carrots, and winter Onions now fill the gardens.—D.

Gazania splendens.—This is an excellent late autumn-blooming plant on warm sandy soil, blooming with great beauty long after hardy natives of more northern climes have succumbed to wet and frost.—V.

Begonia Starlight.—This is a very pretty and free-flowering white kind, now covered with white drooping blossoms. It was raised by Colonel Trevor Clarke. Many plants of it are now in flower at Chiswick.

Helleborus niger maximus.—This large-flowered variety of Christmas Rose now forms one of the most attractive of hardy plants. Its large, saucer-shaped, waxy blossoms are just now greatly appreciated in the London markets, and large importations of roots, well furnished with flower-buds, are being made by London nurserymen.—S.

Improved Pelargoniums.—At the Royal Horticultural Society's meeting on Tuesday last, Mr. Cannell showed stands of cut flowers of Zonal Pelargoniums of an unusually pleasing character. Whilst scarlets of the common type are being raised by hundreds, it is satisfactory to find flowers which in colour are of a decidedly distinct character.—C. S.

Double Colchicums.—This season has been anything but a favourable one for these lovely autumn flowering plants; but a few of them may, however, still be found in good condition. The best of them is the double-flowered variety of C. autumnale, the large pure white blossoms of which are doubly valuable on account of the resistance which they offer to rain, and their lasting longer in flower then other kinds. Mr. Parker, of Tooting has a bed of this, variety beautifully in bloom.—S.

Hardy Cyclamens.—These, where planted in proper positions, are now very beautiful. Under the shelter of trees in Mr. Barr's Nursery, plants belonging to the Ivy-leaved section of the genus growing amongst the Grass, and undisturbed for years, are full of bloom apparantly secure from rains and frost. Many such places in gardens might be rendered beautiful in autumn by means of these and similar bulbous plants, provided they were planted in sufficient quantity to be effective.—S.

Chasselas de Fontainebleau Grape.—Mr. Barron, of Chiswick, who has perhaps had as numerous opportunities of judging Grapes as any one, says that when he wishes to eat a Grape himself he gets, if he can, the Chasselas de Fontainebleau. Fruit raisers, as a rule, compete too much with the sugar bowl, and many will agree in the preference for a fruit of a refined and delicate flavour over the common sugary ones. In the pursuit of merely rich flavour in fruits we fear many having better qualities still have been thrown away. Some day people will begin to ask the grower for delicately-flavoured wholesome fruit.

Hardy Plants at Tooting.—In Messrs. Rollissons' Nursery may be seen several interesting hardy plants not frequently met with. One is Eryngium Serra, a Yucca-like Sea Holly with broad, deep green fleshy leaves, and very ornamental when growing on raised positions. Another is Neja gracilis, a pretty little rock plant with dark green long hair-like foliage, and bright yellow Daisy-like blossoms, which are freely produced from autumn to spring. To these may be added several new and beautiful Echeverias and Sempervivums, all of which are likely to become popular.

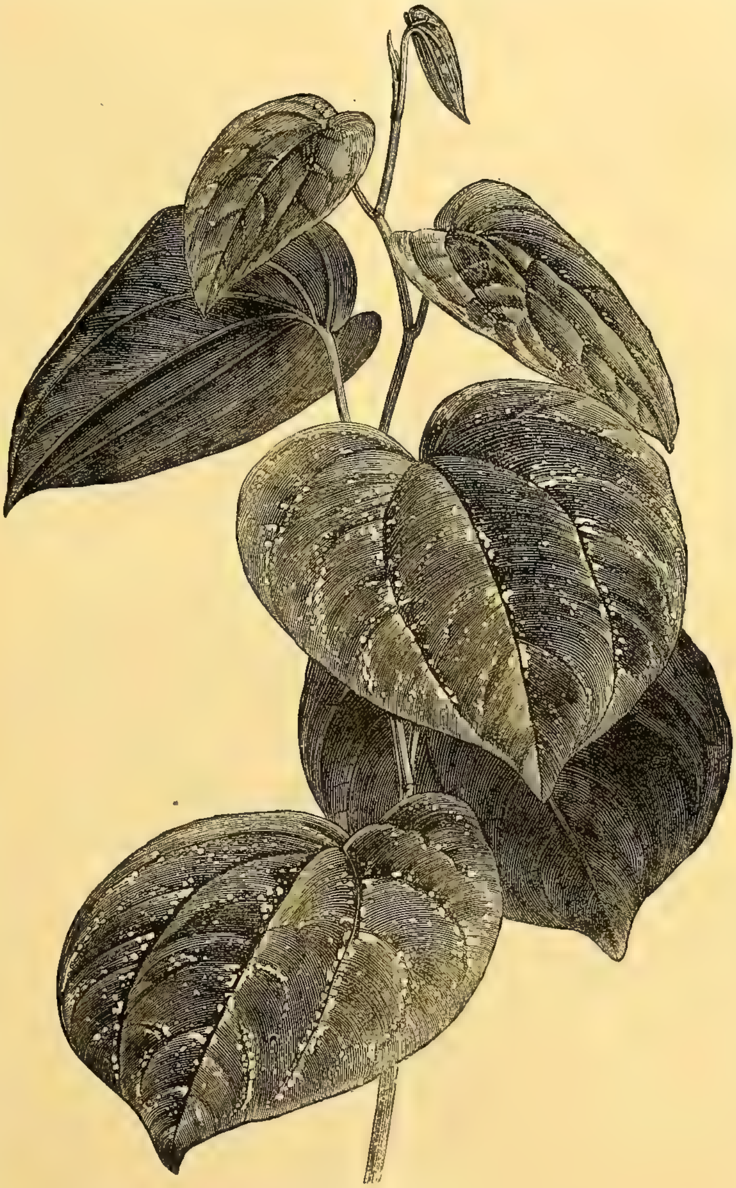
Royal Botanical and Horticultural Society of Manchester.—The council of this society have purchased the large Azalea house at Manley Park, and it will shortly be erected in the Botanical Gardens and used as a show house. A large permanent iron framework is to be put up over the exhibition ground.

The Veitch Memorial Fund.—The trustees of this Fund have not, during the past year, offered any prizes at horticultural exhibitions, and the consequence is they have a considerable balance in their favour; they have therefore decided this year to offer ten prizes, consisting of a Veitch commemoration medal and £5 each, to be given at ten provincial exhibitions as follows:—Belfast—For twelve new Roses, cut blooms, sent out since 1873, inclusive. Brighton—One bridal and one ball bouquet. Clay Cross—One dish of Peaches and one of Nectarines. Dublin—Three bunches of Muscat of Alexandra Grapes. Exeter—Collection of twelve vegetables, distinct. Hereford—Twelve new Roses, cut blooms, sent out since 1873, inclusive. Manchester—Specimen Orchid. Reading—Three stove or greenhouse plants. Woodbridge—Three stove or greenhouse plants. York—Three bunches of Black Hamburgh Grapes.

THE INDOOR GARDEN.

NEW DOUBLE PRIMULAS AT BURGHLEY.

I have just had an opportunity of seeing Mr. Gilbert's double seedling Primulas, and very beautiful they are. They are growing mostly in 4½ in. and 6 in. pots—just the handy kind of decorative plants which everybody requires at this season for a drawing-room stand, or occasionally for the dinner-table. Many of these little plants are each carrying from four to six robust trusses of flowers, well thrown up above the foliage—and such flowers! Imagine one of the largest fimbriated strains of Primulas, with blossoms as double as a Carnation and not much inferior in size, and you will have some idea of those at Burghley; indeed, in the case of an individual flower, especially of the striped or blotched varieties, a double Carnation gives one a very fair idea of its size and substance. I do not wish to exaggerate. There is no doubt Mr. Gilbert grows Primulas well; he puts all the size and substance into them of which they are capable; but, with all due allowance for this, he has originated a strain of Primulas that must become popular when distributed. Some people may say they are difficult to propagate because they are more robust and a trifle less branching than the smaller-flowered kinds, but any one who can grow and propagate the old sorts will find no difficulty with these. This, however, is a matter that does not affect the quality of the flowers. There are half-a-dozen varieties of varying shades between a bright red and a pure white, to which Mr. Gilbert has affixed the following names:—Princess, Mrs. A. F. Barron, Marchioness of Exeter, White Lady, and Ne Plus Ultra. The largest of these—a bold striped flower, Mrs. A. F. Barron—measures 2 in. in diameter; the smallest—a delicate blush, called Princess—1½ in. Mr. Gilbert informs me that he has counted sixty-six fully-expanded blooms on one plant of White Lady, and it must be borne in mind, too, that these plants are yearlings, mostly in 4½ in. pots. Some of them have been exhibited, and have obtained certificates from the Royal Horticultural Society. E. Hobday.



Cissus porphyrophylla.

Cissus porphyrophylla.—This is a free-growing stove climber with variegated leaves, which may be usefully employed for clothing a pillar, rafter, or wall. It succeeds well in a pot in either peat or loam, but, like most plants of a similar character, should have root-room proportionate to the space which it is intended to occupy, as, if it has too much liberty at the roots, it will need cutting in more than is desirable; the soil, when exhausted, can easily be renewed in the spring before growth commences, as, in common with the other cultivated species, it sustains no injury from the roots being interfered with.—B.

A FEW SWEET-SCENTED STOVE AND GREENHOUSE PLANTS.

These are not very numerous, if we include those species only that are strictly greenhouse plants, but the list may be extended by the addition of a few outdoor subjects that force easily. Those named here are all highly fragrant.

Jasminum grandiflorum.—This is a delightfully scented variety of the Jasmine, not very unlike Jasminum Sambac, the popular stove variety, in the flower, but it is much easier to grow, and flowers far more profusely. It succeeds either as a climber or pot plant, and thrives in the greenhouse all the year round. Propagation is effected by cuttings in spring under a bell-glass, and in a little heat; but as the plants can be bought so cheaply at the nursery, and at this season coming freely into flower, let me recommend no one to propagate their own. Loam, peat, or well-rotted leaf mould, sand, and a little Standen's Manure make a good compost for it; and potting should be performed in spring, before the summer's growth is much advanced. Pot plants will require cutting back a little when straggly, after which their growth must not be interfered with, as the flowers are produced in trusses at the ends of the shoots, and continue to unfold in succession for some months. Climbers may be pruned also before starting into growth, and if they are allowed space to grow, and light, and are not hampered too much by tying and training, they will make a good quantity of fresh wood, and produce abundance of flowers. It is one of the best sweet-scented greenhouse plants—not much inferior, indeed, to the Stephanotis—and is little troubled with insects or disease.

Daphne indica odorata.—There are few greater favourites than this. Its odour is just a little too powerful at times perhaps, when the plant is kept in a room, but for the conservatory it is unsurpassed. In the south of England the Daphne indica grows and flowers well in the cool conservatory when placed in a favourable situation—at least, we have known large handsome bushes of it in such places, that flowered most freely; but in the north it is usual to give it a little heat during the summer while making its growth and forming its flower-buds, or until it is about coming into flower, when it is transferred to the conservatory where the flowers unfold slowly throughout the winter and spring, and last a long while. The back shelf of a Vinery or Fig house is an excellent situation for it during the summer—the shade and the heat just suiting it. D. indica is often grafted on a hardier stock, but it is doubtful if grafting be of much advantage to it. It strikes by cuttings also, but, like the Jasmine, it can be had cheaply from the nursery. It grows freely in loam, peat, and sand; but the pots must be well drained, and the plant should not be over-watered, particularly in the winter time—the half-succulent leaves and stems not requiring so much moisture for their support as those of some other greenhouse plants.

Luculia gratissima.—It is but seldom that this beautiful conservatory shrub is seen in perfection. It is both showy as a flowering plant and sweetly fragrant, and the sight of a plant in full bloom at midwinter, or during spring, never fails to arrest attention. It is hardly worth one's while attempting to grow it in a pot; but, planted in good loam, at the sunny, warm end of a conservatory, where the light is not excluded in the least, young plants soon grow up and form large bushes, and flower unfailingly. Large plants are hardly procurable, and are very expensive to buy. In the whole range of conservatory plants, there is no more worthy subject than the Luculia, and few that grow more vigorously or require less attention; but it must have a good place, and a minimum temperature of 45° in winter. A conservatory or greenhouse is warm enough to produce a good growth of wood on the plant; but it requires a mild midwinter temperature to bring it into bloom perfectly. When young, the plant need not be pruned in too closely, if it be desired to get up a good bush quickly; but afterwards the shoots are better pruned in after flowering almost as close as the Vine. New growths are produced freely, and the shoots attain a length of 2 ft. during the summer, and the flowers are produced at their extremities; consequently, no such thing as summer pinching must be practised. Copious waterings at the root and fumigating for green fly are the only attentions which it needs during the summer and winter.

The Orange.—In many gardens a plant or two of the Orange is grown for their fragrant flowers. The common Orange does as well as any, and produces plenty of flowers, if planted out or grown in a large pot in the greenhouse, and in a compost of good loam. The less pruning it receives the better.

To the above may be added, among other sweet-scented greenhouse subjects, exclusive of bulbs and Lilies, several sweet-scented Pelargoniums of the Oak-leaf class and the old Citriodora type, the Diosma, and the scented Verbena (Aloysia citriodora). Of the latter, it is always advisable to have several large bushes, and it does well planted out in the borders during the summer, and even stands the winter in some places. Among bulbs we would specially mention the Hyacinth and Narcissus, and of the latter N. poeticus, single and double, may be recommended for extensive culture, as they are cheap and easily grown. Of forcing shrubs, the common hardy Azaleas rank first, for they are a host in themselves, and are both showy and delightfully scented. Considering how easily they can be forced, it is a wonder that they are not far more extensively used for conservatory decoration. The nurserymen are careful to anticipate the demand for forcing plants—that is, plants set with buds—every autumn; but the best way is to keep a stock of one's own by planting them extensively about the shrubberies, and lifting a certain number of plants every summer. In this way the stock is kept up with very few losses. The Azalea makes a multitude of small roots close to the stem, and consequently lifts easily, and if the plants are potted in leaf-mould and loam or peat, about November, and placed in an early Vinery or Peach-house as wanted, a display of flower may be had from Christmas till May. Among seedlings and named sorts there are various shades of colour—white, yellow, and red—and all are good growers.

Violets.—These force easily in the early autumn and throughout the winter and spring. The two most useful sorts are the Neapolitan and Czar. The former requires to be grown on in pots for the purpose, and is the most difficult to grow; but the latter may be lifted in clumps from October and onwards, and forced most successfully in a greenhouse or any half-cool structure. No doubt others of its class would do equally well. The flowers, when forced, generally open all at one time, and are comparatively soon over; so, to keep up a succession, it is better to lift the plants at different times, and introduce the batches according to the demand for flowers.

Stove Species.

We need only name a few of these. One of the least known, most deliciously fragrant, and showy is the Pancratium fragrans. The flowers, which are large, pure white, and delicate-looking, are thrown up on stout stems like an Amaryllis, to which it is allied, and they are quite as powerfully scented as the Lilium auratum, but more agreeably. It is an easily-grown plant, and the best way is to afford it moderate pot room, good strong sandy loam, a stove temperature, plenty of light, and not to shift it too often. It is better to top-dress it occasionally than to repot it annually; our plants never fail to flower freely under these conditions. It is one of the best stove plants which we possess.

Stephanotis floribunda.—It is not generally known, we believe, but it is a fact nevertheless, that there are two varieties of the Stephanotis, one which is a profuse flowerer, and the other not. We at one time possessed large plants of both, and grew them under the same conditions and, while one flowered profusely, the other scarcely flowered at all. Nurserymen profess to distinguish between the two varieties by their leaves, but we never could discern much difference in that respect. There is no doubt, however, of the superiority of the one over the other for flowering, and buyers should take care they get the right sort. The Stephanotis does well in pure loam and sand, and a little well rotted manure mixed, and likes a stove temperature, but will succeed nearly as well in an intermediate house.

Nymphæa odorata.—This is a beautiful and sweetly-scented aquatic. We have seen it grown most successfully in a shallow pan of good loam and manure placed in a large basin of water on the front shelf of a Pine stove, just above the hot-water pipes, but not in contact with them. The roots are partially dried off in the winter time, and kept in a proportionately warm temperature.

Gardenia radicans and florida.—These are the two best. The Gardenia is a plant that is not generally grown well, for the reason chiefly that it is very subject to mealy bug and scale, and needs continual watching. It also requires a high stove temperature and a moist atmosphere during its season of growth, for which reasons cultivators generally give it a house or pit to itself, where it can also be plunged in bottom-heat. When these conditions can be afforded, it is well worth growing. It succeeds best in a compost of peat, loam, and sand; it should be potted in spring, or after it has done flowering, and at the same time it may be pruned back a little at the top, if the branches are inclined to be straggly.

Jasminum Sambac.—This is not unlike the J. grandiflorum before spoken of, but is of a more trailing habit, and requires heat. It is best trained against the wall of a stove, or on a trellis near to the glass, and pinched as it grows, in order to encourage it to flower more freely. In spring, when growth commences from the previous year's wood, it flowers profusely. As to soil, &c., it requires the same treatment as the greenhouse one.—"Field."

BOUVARDIAS AND HOW TO GROW THEM.

These beautiful plants have become great favourites within the last few years; but, like many other subjects, they have been sadly mismanaged in many instances, as the many weedy specimens one meets out of Covent Garden in private establishments would surely testify. Bouvardia Vreelandi and Hogarthi are the most popular varieties, the one being a pure delicate white, and the other a bright scarlet; they come into flower about this season, and continue to flower till after Christmas. The finest plants in every way that we have seen, this year and last, were grown out-of-doors, plunged in ashes before a low Beech hedge, and lifted and taken in in the autumn; and their beauty, especially of Vreelandi, at mid-winter, when they were green and fresh and flowering profusely, was greatly admired. Their leaves were as green and vigorous as a freely-grown Deutzia gracilis, and the flowers perfection. They far eclipsed anything I have ever seen grown in frames or in a greenhouse all the summer. They were grown thus:—The plants were propagated either in autumn or spring—I forget which—and pushed on in a gentle growing temperature till the warm weather set in, when they were removed to a cool frame; and, after being hardened off, were left exposed to the weather, and now they are green and bushy and abundantly set with flowers. A number of my own plants, treated in the same way, are just in the same condition at the present time. It is not necessary to propagate fresh plants every year, as the old plants, pruned in well and started, make the best specimens. It does not appear desirable, however, to prune the plants long before they start into growth—Vreelandi at least, as according to my experience the plants go off, just as Sage plants sometimes do that have been cut over-late in the season. Of two dozen plants which I bought last winter to add to my stock, and which were pruned when I came, the half died before March. They died back from the tops while standing in a comfortable temperature in the greenhouse; but those that survived did well after growth did commence, though they had died back to the surface of the pot, every one of them, Hogarthi suffering the least. For these reasons, I deem it unwise to prune before potting time comes round. The Bouvardia is easily propagated by cuttings of the young or half-ripened wood in spring, with the assistance of a little heat—like bedding plants, in fact; but it is better if they can be protected by a bell-glass, which must be tilted up slightly on one side to admit air. They must not be over potted, and they succeed well in loam and peat and sand well drained. 5-in. and 6 in. pots are a good size in which to grow compact, tidy, little specimens 1 ft. or

18 in. through. Though they prefer the greenhouse to the hothouse in the winter, still they must have an airy, dry temperature of from 45° or 50° to 55° in order to bring the flowers out in perfection.

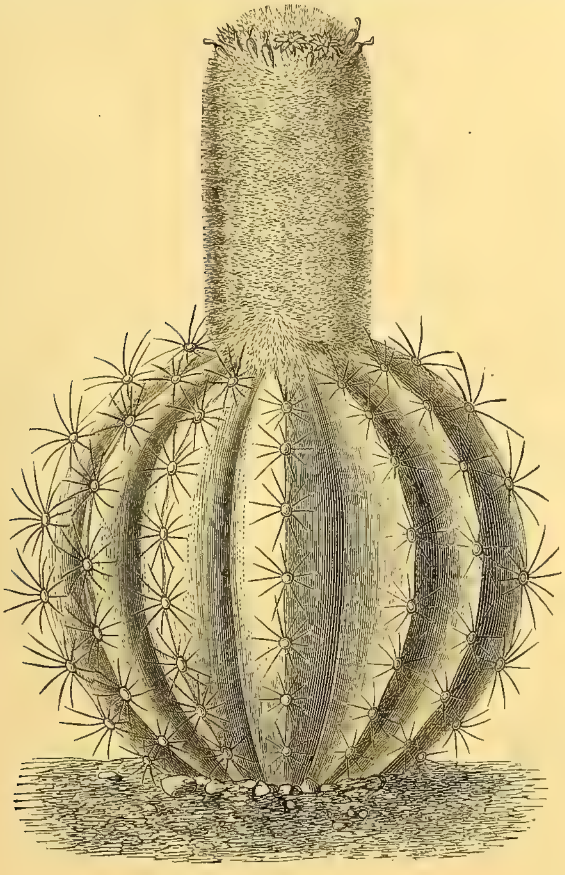
J. S.

THE TURK'S CAP.

(MELOCACTUS COMMUNIS).

This is a plant which some have had much difficulty in growing, owing to its being generally imported in an aged state. Being a native of the West Indies, it likes more heat than other Cactuses. It may be grown from seeds, which are contained in quantity in the cap, but they must have a shelf in the stove during winter, and be kept growing. When they are imported in a large state, they should be placed in the full sun and kept dry; but after the flowering head is formed, they make no more growth. A great source of failure is allowing the cap to get wet, for, being so woolly, the water gets at the heart, and quickly rots it.

J. Croucher.



Melocactus communis.

Tritonia aurea in November.—This, grown in pots for conservatory decoration, or plunged in the open air, is unsurpassed by any other plant at this season of the year. With us its masses of brilliant orange flowers are produced freely from October to the middle of this month in the open air, but it should be stated that it is a good deal sheltered from the south and west winds. It luxuriates in a compost of light turfy loam, with about a sixth part each of well-decayed cow manure and leaf-mould, to which should be added a good sprinkling of river-sand. Some recommend leaving it undisturbed for years, but with this I cannot agree, as I find that by repotting it annually in fresh compost, the flowers and flower-spikes are at least twice the size of those on plants left undisturbed. When it has done flowering, I remove the pots in which it is grown to some shed, secure from frost or damp. I give no water until the old flower stems come easily away from the bulbs, and by that time the young shoots for flowering the following autumn, will be making their appearance. The pots should then be removed to a greenhouse or frame, where they will get plenty of light, and, as the shoots grow all to one side of the pots, leaving the other side without any at all, it is best to let them grow from 4 in. to 6 in. above the soil before they are shaken out of the old compost, when the shoots can be placed at equal distances apart in the pots. They should then be placed in a little heat, to encourage them to grow, for a couple of weeks, and afterwards removed to a cool house or frame until April, when they may be set in some sheltered place out-of-doors until the middle of May. After that, they should be fully exposed, and given copious supplies of water and liquid manure occasionally. Any one who once grows this plant well will never afterwards be without it.—Thos. Spelman, *Derry Castle, Killaloe.*

Kew, Chatsworth, and Syon Conservatories.—After the startling statement in The Garden of last week (see p. 435), any one might be excused for thinking that Mr. Speed's notions of square measure are very hazy. Why, if we take his figures, the splendid structure of which he has charge has a superficies of nearly 26 acres! Mr. Speed evidently confuses cubic with square measure. The comparative sizes of the three large houses, as given in The Garden for Sept. 15, are, I find, identical with those given in a published report of the late Sir W. J. Hooker, and, in my opinion, there is little reason to doubt their correctness. According to Oliver's "Guide to the Royal Botanic Gardens and Pleasure Grounds, Kew," the dimensions of the great Palm stove are as follows:—Entire length of structure, 362 ft.; centre, 100 ft. wide and 66 ft. high; wings, 50 ft. broad and 30 ft. high; there are about 45,000 square ft. of glass in the building. At Chatsworth, Mr. Speed says there are 70,000 square ft., but that is easily explained, when we remember that at Kew the "ridge and furrow" system does not obtain, and that at Chatsworth it does, unless my memory greatly deceives me.—G.

Gesnera exoniensis from Leaves.—For the decoration of the stove or dinner table, this is one of the handsomest winter flowering plants with which I am acquainted. The flowers are deep orange scarlet, with golden throats, and they are produced close together in masses 6 in. or 8 in. through. The foliage is of a dark rich velvety texture, and covered over with minute red hairs. The tubers which are large are sparingly produced, but the plant is easily propagated by means of leaves in the same manner as Gloxinias, or ornamental leaved Begonias. If the leaves be put in any time before October they make fine tubers for flowering the following season. For flowering in midwinter the tubers should be started in a gentle bottom heat in April, and grown on in a strong moist heat until September. After that they should be kept somewhat drier and cooler for two months, keeping them well up to the light, but shaded from sunshine. Afterwards they may be introduced to the stove, giving them a good soaking with weak soot water twice a week, which will greatly improve the colour and size of the blooms, which will continue in good condition up to Christmas.—Thos. Spelman, *Derry Castle.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Torenia Fournieri.—Mr. Barron had the happy idea of putting this new plant alternately with the old Torenia asiatica—both being grown in baskets. The result is that T. Fournieri proves as good a plant as the old one, and with the addition of another colour—the strain of yellow. It is charming as a basket plant in a warm house.

Ivy-leaved Pelargonium L'Elegante.—This is grown largely at Connington Castle for winter decoration. Large strong plants of it well supplied with water, and placed on a shelf in a strong light near the glass, will acquire a pink tinge that makes the foliage lovely for many forms of decoration by candle light. The leaves are suffused and edged in a most charming manner with pink.—E. H.

Saving Old Plants of Dracæna australis.—When the Dracænas, now becoming common in our houses, become too tall for their quarters, and must be cut down, there is a way of saving the crest of the plant, by making an incision in the stem, and placing a pot with soil and Moss kept moist around it; after a time roots are emitted in the pot, and then the stem may be severed, and the base used for purposes of propagation or cut down. There is an interesting example of this mode of propagation in Mr. Wimsett's Nursery at Chelsea, where a very tall and fine Dracæna is being thus treated.

Beaucarnia longifolia Suspended.—Somewhat young plants of this look very well suspended in Mr. Williams's winter garden, at Holloway, the foliage streaming down for a length of 5 ft. or 6 ft. They are in pots, and would also succeed in baskets in a young state. This plant may, therefore, be effectively used in all stages of its existence.

Ficus repens as a Curtain Plant.—Large numbers of plants of this are grown in Mr. Wimsett's nursery at Chelsea, to a length of 4 ft. or so from the pot. In small 5 in. pots, these are placed along the edges of the central beds and hang down to the ground, gracefully draping the walls. Being easily moved, they are also useful for forming similar curtains in rooms.

ROSES.

FORCING MARECHAL NIEL IN POTS.

In order to have Maréchal Niel Roses early, there is no better plan than that of growing a few plants for very early flowering in pots. The idea of experimenting with "stocks" on which to grow this Rose is now out of the question; it should be grown from cuttings on its own roots, and those who have raised pot Vines from eyes successfully cannot do better than follow the same principle in the case of this Rose, with very slight modification. There must, of course, be a beginning to every project, and, just as the pot Vines are started and grown with a view to fruiting at a certain time, so should canes of this Rose be worked in order to enable the grower to have flowers at the time best adapted for his particular purpose. To make certain of strong healthy canes, cuttings should be taken not later than the end of May or beginning of June, selecting for the purpose shoots of medium growth, as these are most likely to thrive under the course of treatment to which they must be subjected in order to attain the desired end; there is no time to be lost; in fact, after success depends on quick and healthy development of root and branch. If the cuttings be selected with care and inserted from three to six in a 5-in. or 6-in. pot, or singly in smaller pots, and placed in a smart bottom-heat, they will root readily and grow with amazing rapidity. A hotbed on the decline, as regards heat, I consider to be the safest and best place in which to propagate; there is a sweetness and a growing atmosphere within a well-managed frame on fermenting material that all soft-wooded cuttings like, and, under such conditions, I find Rose cuttings to thrive amazingly. When well rooted they should be potted off in pots varying in size according to the individual strength of each plant, and again returned to the cutting frame till growth is established, after which they may be removed to any house or pit that can be conveniently spared, and trained up the wires like a Vine. All growths emanating from the base of the plant should be immediately stopped, in order to concentrate the whole strength in one single rod. It would also be well to keep the canes always growing in a perpendicular direction, as the best and simplest preventive against the production of side shoots, which often make their appearance when the flow of sap upward is arrested. Occasional fumigations will be required to keep green fly in check, and daily syringings will also encourage growth and assist in the way of cleanliness. When the plants show symptoms of growth having exhausted itself, more air and less water should be given, in order to harden the young wood and render it fit to be turned out of doors. The very fact of the roots being restricted within a 12-in. pot will cause early maturation, and rest should be attended to for some time afterwards. If there be any danger of premature excitement, steps should be taken to obviate such a contingency by removing the plants from exciting influences and keeping their roots in a quiet (not a dry) state. If the young laterals with the future embryo flowers are in an advanced state, the plants must be re-taken indoors, where they will have the shelter of a cool house, before early frosts make their appearance. They may be started gently any time after Christmas, but the longer forcing can be postponed, and the more gentle it is carried on, the better it will be for the future Rose harvest. Roses grown in this way should be treated exactly as pot Vines are, viz., a fresh stock should be raised every year and thrown away after flowering. This is a plan which, with ordinary intelligence and care, will be found to give satisfaction. W. Hinds.

Otterspool.

THE ROSE ANNUAL.*

The Rose Annual for 1877-8, by Wm. Paul, just published, contains coloured plates of the climbing Hybrid Perpetual Red Dragon; Rosy Morn, a seedling from Victor Verdier; Magna Charta, a fine variety which Mr. Paul thinks may prove to be a Hybrid China; and Perle des Jardins, a pale yellow Tea resembling Perle de Lyon, but, nevertheless, different from that kind, and stated to be one of the best yellow Tea-scented Roses in cultivation—equally good in pots, under glass, or in the open ground. In addition to the letterpress descriptive of these plates, there are also chapters on the Current Year, New Roses, Roses for Garden and House Decoration, Roses for Exhibition, the Rose Shows, and Correspondence relating to Roses. From the latter we select the following remarks by Mr. Arthur W. Paul on "Roses on Their Own Roots."

At the present moment, perhaps, more than at any other time, the opinion of the Rose-growing public seems setting in strongly in favour of plants which have never been budded or grafted. Dazzled for a long time by the extraordinary vigour and celerity of growth of plants worked on the Manetti, and also by the enormous size of the flowers produced under careful and generous cultivation, to the mass of Rose growers own-root Roses were a long-forgotten thing of the past, which the mind associated only with the idea of the old Gallicas, Hybrid Chinese, and other favourites of a byegone generation. Valuable, indeed, as the Menetti stock is, on account of its easy adaptability to soils and climates generally considered unfavourable to the cultivation of Roses, and granted also the excellence of the seedling Briar as a dwarf stock, especially when Rose flowers in autumn are a desideratum, it is, nevertheless, we think, a matter of congratulation that more attention is being paid to plants on their own roots. It is true that they take longer to establish themselves, and do not, therefore, make large plants so rapidly or yield such a quick return of quantities of flowers as budded plants, but without taking into consideration the fact that certain kinds, such as Maréchal Niel, are best suited to this mode of growth, this is more than compensated for by the longer duration of the plant's existence, and by the exemption from the plague of suckers and offshoots which require constant watching for on worked plants, but which we so often see developed through neglect in private gardens to such an extent as to imperil the existence of the Roses themselves. We are also of opinion that there is generally a refinement and finish about the blooms on own-root plants which contrasts favourably with the coarseness and roughness apparent in so many of the flowers cut from worked plants, especially when produced on maiden or one-year-old plants. It is often taken for granted that if worked plants be planted sufficiently deep as to ensure the burying of the junction between the scion and stock, the former will throw out roots, and by taking the plant up at the proper season, and cutting away the stock, a plant on its own roots will be the result. By this means the end aimed at would of course be attained, but we are rather sceptical as to the adaptability of the mass of varieties to this treatment, and are of opinion that it is better to start at once with plants that have been struck from cuttings or layers. In making a bed for Roses on their own roots, perfect drainage is indispensable. The perfection of soil may be described as a medium Rose soil, neither so heavy as the Briar delights in, nor so light as the soils for which the Manetti is so highly valued. A rich loam, not too heavy, with which has been mixed some river or road sand and some leaf-mould will be found to answer admirably. As with any other Roses, a good proportion of well-decayed stable manure, mixed with the soil in planting, will be found to yield greatly improved results, both as to growth and the quality of the flowers. Cuttings struck in the open ground, as well as layered plants, are best planted out at the end of October, or early in November, but many of the finest varieties, especially among the Tea-scented class, are too tender to be struck in this way, and have to be rooted in heat, and subsequently cultivated in pots. Such plants, and, indeed, all pot-grown Roses of every description, should never be planted out-of-doors later than the beginning of September, as after that time, and throughout the winter and early spring, the ground is so soft and saturated with water, that it sinks away from the more solid earth which composes the ball of roots of the plant, and the result is a vacuum or loose soil which becomes speedily filled with either water or cold air, and, by causing the roots to rot, is extremely prejudicial to the well-doing of the plants, causing, in fact, a high rate of mortality. It may be desirable, for various reasons, to procure pot-grown plants during the autumn and winter, but they should remain in their pots in a cool frame, or under a hedge, or in some other sheltered position, until the warm weather approaches; they may then be planted out at any time from May till August. For the first few weeks they will require a little attention; watering must be carefully looked to when necessary, and when first planted it is well to shade them from the sun's rays, if too powerful. Treated in this manner, they will root freely and be well established in the ground by the winter. As a rule, plants on their own roots, especially when pot-grown, are not so large as worked plants of the same age, owing to their slower growth; for this reason, also, they are rather apt to try the patience when first planted out, but when once established, they grow so well, and are so little trouble, that the extra time they take in their early stages is easily forgiven and forgotten.

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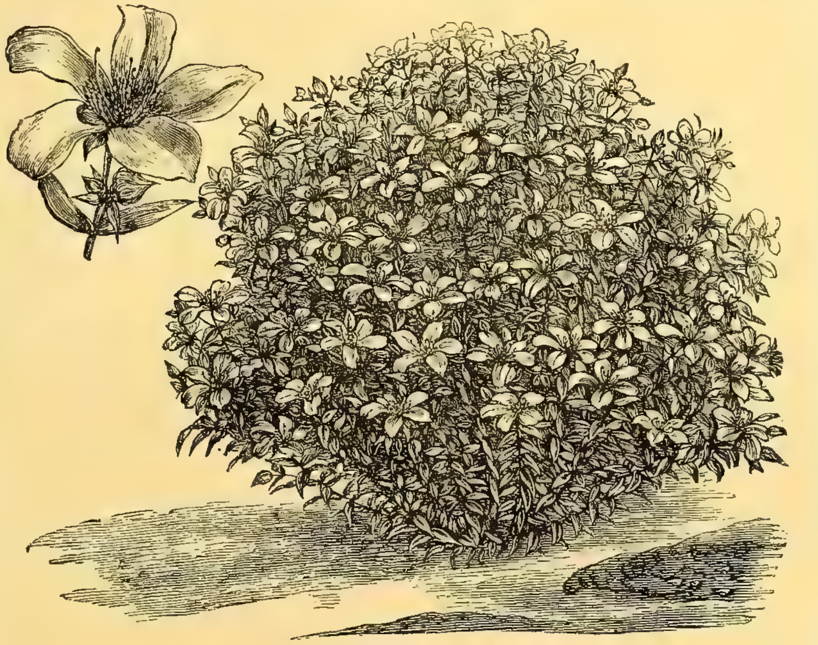
* "The Rose Annual for 1877-8." By Wm. Paul. Published by the author, Paul's Nurseries, Waltham Cross, Herts.

THE FLOWER GARDEN.

CANTERBURY BELLS IN MASSES.

I have just filled a border, about 120 ft. in length and 7 ft. in width, with nearly 300 strong plants of this fine hardy biennial. That such a mass of it will give a rich and varied effect next summer I have no doubt. The only drawback is the hot, dry weather that generally prevails in June and July—the blooming period—which is apt to affect this Campanula. It is therefore well to give the individual plants plenty of room, in order that they may have all the moisture possible when most required. If seed be sown in pans or boxes in the month of April, the young plants so produced will develop fine compact heads of foliage, and in this way will be quite ornamental in the borders during the winter. The flowers of the Canterbury Bell are most useful for house decoration, and, being borne individually on stems from 4 in. to 6 in. in length, are specially adapted for cutting. Some of the blooms are drooping, but in a good strain, where there is an abundance of the double forms of flowers, the blooms are more erect, and work well into nosegays, or are useful for any purpose. It is not difficult now to obtain some twenty or more distinct hues of colour in a number of plants, ranging from pure white to blue and purple, the rose-coloured tints especially being exceedingly handsome. The plants also lift into pots easily, and when so treated, and plenty of water given them, will hold their flowers for a long time. When in pots, they are exceedingly ornamental for the decoration of verandahs, corridors, halls, and other cool places. Of Campanulas there are now a great variety. The best, perhaps, of the taller-growing kinds are C. grandiflora, C. persicifolia and its white variety, Van Houttei, and the one now under notice; and of the smaller varieties, C. carpatica (both blue and white), C. nobilis (both the reddish-purple and the white), C. pulla, C. Raineri, C. garganica, C. pumila, C. p. alba, C. Hendersoni, and the old C. turbinata.

D.



Hypericum Olympicum.

HOSE-IN-HOSE POLYANTHUSES.

This section of hardy spring flowering plants would seem to be amongst the earliest of all to flower, as several kinds are now more or less in bloom. Golden Gem, a remarkably effective yellow kind, is a very robust grower, and will, without doubt, prove to be a fine spring bedding plant. The flowers are large, and, like a true Hose-in-Hose, are produced on the stems in couples of rows of petals separated by a short interval. This is a pin-eyed variety, but this naturally detracts nothing from its decorative qualities. Golden Queen is the duplicate of the former, except that the flowers are thrum-eyed and a shade richer in colour. Cloth of Gold is a deeper hue still, but this is also pin-eyed. The finest white Hose-in-Hose is Avalanche, the flowers of which are large, pure in colour, and borne in large, compact trusses; it promises to make a grand white bedding kind. The old white Hose-in-Hose has large flowers of a French white tint, and is a most valuable hardy spring flower. I had conceived this kind to be very scarce, but last spring I was fortunate enough to light upon a garden where it was grown in great abundance. Perhaps one of the most effective kinds for massing is the crimson Hose-in-Hose, as dark rich hues are in great request in the early spring garden. This is also a very robust grower, and stands the summer drought well. The fancy section of Duplex Polyanthuses gives a great variety of novel and curiously-marked flowers, all of which are exceedingly attractive whether used in beds or planted singly in borders. It will probably soon be possible to select at least a dozen good distinct bedding kinds of these early Hose-in-Hose varieties.

Bedfont.

Home-saved Stock Seed.—When visiting a nursery this season, in which there was growing a beautiful collection of summer stocks, I made the enquiry as to what amount of seed was saved; but was informed that no attempt was made to save any, as it was understood that home-saved seed was of no value; and, therefore, all the seed was obtained from the Continent. That a sort of tradition has long existed as to the superior value of Continental-raised seeds of Balsams, Stocks, and Asters, there can be little doubt; and it is difficult to dispel the illusion. With reference to the Balsam, Messrs. Smith, of Dulwich, and other growers, have long shown that no strains can or do excel theirs saved from seed of home growth. I have long found that Victoria Asters of the best quality can be raised from home-saved seed; and Messrs. Betteridge, and other growers, have also long shown what excellent quality can be obtained in the Quilled Aster from home-saved seed. Of Stocks, we know what our own seed will produce in Bromptons, Queens, East Lothians, and Intermediates, all of which, if of good strains, produce 50 to 60 per cent. of double flowers; and of summer kinds, the beautiful pyramidal Mauve Beauty is a fair evidence of what sort of quality home-saved seed of these will produce. I have grown this Stock continually for the past ten years, and through all those years, it has never varied from its regular average of about 75 per cent. of double-flowered plants.—A. Dean.

The Olympic St. John's-wort (Hypericum Olympicum).—This is certainly one of the most showy of this extensive family, and the best of all the hardy species. Numbers of them are exceedingly pretty, such as H. balearicum, ægyptiacum, ericoides, reflexum, glandulosum, and others, but then these are not hardy in the ordinary sense of the term, inasmuch as they require to be planted at the base of a south wall, on rockwork, and similar places, and even then they are apt to suffer during severe winters. H. Olympicum, on the contrary, will grow in any situation and in almost any soil, and, during two or three months, forms a conspicuous and showy object. When well established it does not exceed 15 in. or 18 in. in height, and forms a neat symmetrical bush from 18 in. to 24 in. in diameter, composed of numerous slender stems, yet of sufficient substance to maintain their position. The foliage is small, ovate, elliptical, with pellucid dots. The flowers are produced in terminal clusters of from four to eight on each stem. They are about the size of a florin, and when in full bloom form a complete bouquet of golden-yellow blossoms. Among others of this family worthy of cultivation might be mentioned—H. decussatum, tomentosum, Burseri, Nummularia, and the old favourite Rose of Sharon (H. calycinum).—A. P.

Hoop Petticoat Narcissi.—I shall be most happy to show "A. R." (see p. 345) Narcissus Bulbocodium serotinus (Corbularia serotina of some), and also to send him flowers of the different varieties as they appear. It is too late now to remove them from the ground, owing to their being in full growth, and having leaves from 4 in. to 5 in. in length. The foliage of this variety is longer than that of Corbularia conspicua; the flowers, too, which are larger, come into bloom about a fortnight later. C. tenuifolia flowers first, C. conspicua second, and C. serotina last. N. Clusii is now pushing its flower-buds through the ground, part of the same that flowered last season; I cannot say whether the identical bulbs that bloomed last year will flower this, but next season I shall be able to speak upon this point, for I will mark a number of flowering bulbs and keep them by themselves, in order to see if they will flower the following season; I see no reason why they should not, provided they are planted early and grown well. The chief cause of failure in the case of this plant is late planting. August I consider the best time for planting it; if dormant bulbs of it be planted in November or December, they will, in all probability, lie in the ground for a season, and then make a miserable attempt to grow, pushing up a solitary leaf and no flower, and the following season will entirely disappear. —A. P.

BEDDING PANSIES AND VIOLAS.

Few plants are more useful for keeping up a display of colour throughout the season than the different races of bedding Pansies and Violas, which are, indeed, intimately allied, all belonging to the same botanical family, Viola, but the former evolved out of the improved garden forms of V. tricolor and its allies; while the latter, those at least of a purplish hue, partake more directly of the blood of V. cornuta, and those with yellow flowers of V. lutea. The two latter especially are very persistent bloomers. The following notes, from memoranda made at Chiswick, and extending over the last year or two, may be regarded as descriptive of some of the more distinct and beautiful of the varieties there grown, selected either for their compact dwarf habit, the profusion and continuity of their blossoms, and their useful and effective colours, just the points which give their value to Pansies as bedding-plants. All of the following have won certificates as bedding-out plants:—

Flowers Mottled.—Magpie.—An old, but useful variety, striking in appearance from the strongly contrasted colouring of its flowers; vigorous, hardy, and an abundant bloomer; flowers blackish-mulberry, with a large wedge-shaped spot of white at the tip of each petal; the spotting somestimes runs out, when for a time it becomes self-coloured.

Flowers Purple.—Dean's Mulberry.—Dwarf-growing and of compact but spreading habit, free-flowering; flowers dark reddish plum-purple with very small yellow eye; the flowers well displayed. Dean's Lothair.—A showy variety, with a dark compact habit of growth; flowers large, deep purple, with small yellow eye; and broadish bronzy spot just below it on the lower petal; a distinct and rich-looking flower. Dicksons' The Tory.—Of free and vigorous growth, blossoming abundantly and continuously; flowers large, deep bluish-purple, with white eye, in the front of which is placed a bilobed mulberry spot; good.

Flowers Bluish-mauve.—Dean's Blue Bell.—A very showy variety, of compact, spreading, and free-blooming habit; flowers numerous, medium-sized, mauve-purple, with a small yellow eye pencilled with dark lines. The individual flowers are not equal to the average Pansy in shape, as they partake much of the Carnation type, but the effect of the mass is good, and it is a continuous bloomer. It is probably the best bedding Viola in existence. Blue Perfection.—Of compact, free-blooming habit; flowers medium-sized, of a deep reddish mauve with yellow eye; a fine effective self-coloured variety.

Flowers Lilac.—Dean's Lilacina.—A charming variety, of dwarf compact spreading habit, free-growing, and very distinct; flowers of moderate size, the upper petals of a reddish-lilac, the lower ones bluish-lilac, with small yellow eye; an exceedingly pretty and taking flower. Dicksons' Queen of Lilacs.—A variety of free bold habit, forming close, vigorous tufts; flowers reddish-lilac, paler at the edge, and very freely produced; a soft, neutral colour, effective, and useful for grouping.

Flowers Yellow.—Dicksons' Sovereign.—Of close growing habit, dwarf, free, and prolific of blossoms; flowers moderate in size, bright golden yellow, with a pencilled eye; very effective. Dean's Bedfont Yellow.—A free-growing, compact-habited sort; flowers large, bright golden-yellow, with pencilled eye; good. Dicksons' Golden Gem.—A variety of dwarf spreading habit, and a free bloomer; flowers large, deep yellow with deeper eye, over which occur dark pencillings; good.

Flowers White.—Dicksons' Queen.—A variety of free compact habit, an abundant bloomer, but rather later than some others; flowers large, white, with yellow eye and pencilled lines. Dean's White Swan.—A fine variety, of close tufted habit; flowers of moderate size, pure white, with pencilled eye, of good substance, and very chaste-looking; fine.—T. Moore, in "Florist."

Godetia Lady Albemarle.—From a bed of this sown during summer I recently lifted a few late dwarf compact plants that were too late to produce seed, and I placed them in pots, and put them into the greenhouse. They have bloomed most freely, and are singularly beautiful, quite exceeding all that could be expected of them under such circumstances; the flowers have expanded well, and are of that deep rich colour so peculiar to this kind. As an experiment I should recommend the sowing of a small quantity of seed of this Godetia about midsummer, pricking out the young plants, and growing them in the open air until the middle of October when they might be put into the house under glass; the flowers only slightly contract at night, but do not close.—A. D.

Pyrethrum aureum laciniatum.—To those who prefer fine-foliaged plants for the destinctive hues of colour which they give when used for bedding purpose, this new Pyrethrum will scarcely prove satisfactory, as there can be no doubt that, looked at from that point of view, it is decidedly behind the old and well-known kind. That mere effectiveness in colour is all that fine-foliaged plants, even hardy ones, should possess, will not perhaps be the opinion of everybody, and, therefore, some will be pleased with this new Pyrethrum because of the beauty of its delicately-cut leaves. I have found it to possess one other useful feature as regards yearling plants, viz., these do not run off to flower so soon as the plants of the old kind do, and they are more even and regular in growth. Where, in bedding arrangements pleasing contrasts are required without having too much colour, Osborn's Pyrethrum will afford entire satisfaction. —G. H.

White Chrysanthemums.—I have a row of some fifty strong plants, chiefly of Mrs. George Rundle, the rest being Madame Domage, that are now full of buds, and many are bursting into flower. Judging by these, I should think that Chrysanthemums will not be so late in flower this year as is generally anticipated. These two kinds are undoubtedly the purest white ones, and, the flowers being of medium size and fairly solid, are most acceptable when cut for bouquets, as well as for the many and various uses to which flowers are put in a cut state. I planted these out last April, being obtained from early cuttings, and, as the soil was made good with manure, they have done remarkably well. Chrysanthemums, however, flower so late that the chances of getting good clean blooms is almost out of the question, and therefore I am about to try the experiment of lifting these plants and replanting them thickly in a bed in the centre of a large, airy, span-roof house. If I can accomplish this successfully, I shall then have secure from the weather all the beautiful blooms now expanding, and under glass they will not only be quite clean, but will also be even of a purer white than if left in the open ground. The Chrysanthemum is not a difficult plant to lift with a good ball of earth, as its roots are literally one mass of fibres, and these hold the soil well together. To have the soil fit for working, frequent soakings of water have recently been given to the plants, but now that heavy rains have fallen the ground is in the best possible state for lifting. A trench will be thrown out at 10 in. or 12 in. from the row, and then each plant will be carefully cut out with a good ball of earth and carried singly into the house.—D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hardiness of Hyacinthus candicans.—This has proved to be perfectly hardy on the Continent. I saw some plants of it the flower-spikes of which reached 4 ft. in height, and they had withstood as much as 2° Fahrenheit.—Max Leichtlin, *Baden-Baden.*

Hardiness of Yucca Treculeana.—Reading in The Garden notes respecting the hardiness of this fine Yucca, I may mention that about five years ago Mr. Bain, late curator of the Dublin College Botanic Gardens, planted two specimens of it in a border there; and that without any special protection since, they are now in robust health.—John Adair, *Dublin.*

Mandevilla suaveolens Out-of-doors.—This is generally grown in this country as a greenhouse climber, and not unfrequently it is to be found in a stove. This summer I was surprised to see it doing well out-of-doors against a south wall. It was bearing great trusses of flowers, and certainly seemed quite at home.—F. W. Moore, *Botanic Garden, Dublin.*

Planting Water Lilies.—The best mode of doing this is to procure some old, shallow, flat baskets, such as nurserymen use for packing plants, and in these to plant the thick, fleshy rhizomes, using strong loamy soil, and ramming it in firmly. Then drop the basket into the spot where the Lilies are intended to grow. This can be done at any time during the resting season—say, from November till April—during open weather. This is a better plan than attempting to sink the stems into the muddy bottom by means of stones or other heavy weights.—"Florist."

Oxalis lobata.—This is a little gem for rockwork. It has been in flower here since June, and its numerous golden-yellow flowers, the size of a sixpence, show very well above the bright green foliage. It is quite hardy.—Max Leichtlin.

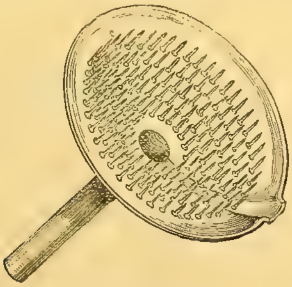
SCENT-YIELDING PLANTS.

By G. W. SEPTIMUS PIESSE, Ph.D., F.C S.

Orange, Bergamot, Lemon, Citron.

Of all scent-yielding plants none has a value at all equal to that of the Orange. It is a mine of perfume in itself. The blossoms yield, according to their mode of treatment, two distinct odours, one having the true scent of the flower, the other a scent called Neroly. Orange peel, too, furishes a delightful perfume, with which all of us are familiar; and lastly the leaves give a scent inferior only to the true Neroly. Here then we have from one plant no fewer than four perfumes. Orange stocks are raised from seeds or pips, and in the third year they are grafted either with the Sweet Portugal or Bitter Bigaradier. In the fifth year they should be planted where they are to stand; the soil in which they are to be placed should be trenched at least 4 ft. deep, and well manured, inasmuch as fifty years, nay, even a century afterwards, the results of good early treatment will be apparent. Orange trees require fifteen years to reach maturity, but they will produce both flowers and fruit in four or five years. When in full vigour each tree yields on an average 25 lb. weight of blossoms annually. Many plantations of Orange trees at Nice are more than a hundred years old. At Fontainebleau there may now be seen Orange trees bearing flowers and fruit at the same time, that were planted by an ancestor of mine two hundred years ago. At Nice a public market exists for the sale of Orange-blossoms during the season when the trees are in bloom. The bitter Orange-flowers fetch 3d. per lb., those of the sweet Orange 2d. At Nice the market season for such flowers generally lasts upwards of a month, and during that time there are sold from 15 tons to 18 tons of flowers daily! A ton of flowers will by means of distillation yield say 40 oz. of Neroly Otto, worth 20 guineas; and the residuary water—Orange-flower water—five guineas. Orange-flower fat, or butter, and oil are manufactured to a large extent by the enfleurage and macerative process; it requires about 8 lb. of blossoms to enflower 1 lb. of grease, the operation being divided into about thirty repetitions of a small quantity of flowers over or in the same grease. By digesting this Orange-flower grease in the proportion of 6 lb. to 8 lb. in one gallon of rectified alcohol, there is obtained the extract of Orange-flowers, a handkerchief perfume which is surpassed by no other scent; it is exquisite in itself, and, when blended with extracts from other flowers, it composes what is termed a "bouquet."

The Otto of the Orange fruit is procured from the peel by what is called the 'Ecuelle process. The 'Ecuelle is a tinned-copper bowl, furnished with concentric rows of short spikes or teeth, and a hollow handle with a gutter from it to the edge of the bowl, through which liquid from the hollow handle can be poured. In order to obtain the Otto, the fruit is rolled by hand over and over the spikes, thus breaking the peel in such a manner that the Otto spurts out into the 'Ecuelle, and finds its way into the hollow handle, which, when full, is emptied into another vessel. An inferior quality of Otto is procured by rasping and sliceing the peel and then pressing out the juice; and this, and the better process just described, are those by which the fruits of all Citronworts are divested of their scent-yielding properties, operations which are put into practise to a great extent at Messina, in Sicily.



The 'Ecuelle.

The Citrus Bergamia or Bergamot Lemon, is a plant of great value as a scent-yielder; its perfume is so much in demand that its annual production in Italy has never satisfied the market. The Messina dealers and their allies carefully adulterate the true Bergamot Otto with Lemon Otto, thus spoiling an article worth from 30s. to 40s. per lb., in order to sell it at 10s. One hundred fruit will yield about three ounces of Otto. The name of this variety of Citronwort is derived from the city of Bergamo, in Lombardy, from whence, so far as we can ascertain, the Otto was first sold. The Otto of Bergamot, of the finest quality, is obtained by means of the 'Ecuelle, but about four fifths of it in the market is a distilled product, or one expressed from the rasped rind of the fruit. About 40,000 lbs. weight of Otto of Bergamot are annually imported into England.

Bergamot (Citrus Bergamia—Risso).

Among one of the Leeward Caribbees is Montserrat, a little island on which Citrus Limetta grows most prolifically, and in almost an indigenous manner. Under the care of Mr. Joseph Sturge, the Montserrat Company, of which Mr. Sturge is director, annually produce no less than 1000 lb. of the true Otto of Citron, all by means of the 'Ecuelle process, and it is so pure that it is worth twice its present price in the market, but the products of Sicily, which are by no means good, compete with it to its disadvantage. Mr. Sturge states that "his Orange orchards consist of about 500 acres, and that each acre contains about 200 trees. It takes seven years from the seed for them to come into full bearing; they flower more or less whenever they get heavy rain, and the fruit ripens in about four months after the flowers appear." He therefore gets fruit all the year round, but the chief harvest is from September to January.

The importation of from 85,000 lb. to 90,000 lb. weight of Otto Lemon annually into England proves that Britannia has a great liking for this scent, which is extracted by rasping the fruit and afterwards expressing the pulp so produced of the Citrus Limonum. The Otto of Lemon in the market is principally from Messina, where there are hundreds of acres of Lemon groves; indeed, the extraction of the Ottos of Lemon, Orange, and Bergamet, constitutes the chief industry of Sicily, particularly in the vicinity of Palermo. Here, instead of the 'Ecuelle for breaking the peel, a drum spiked inside is employed, and in this 100 fruit or more are operated on at one time; no doubt, sooner or later, steam will be employed to rotate these drums, and thus we may expect the supply of these scents to be kept up equal to their demand; nevertheless, as the land of Italy is already occupied, there is ample room in European markets for similar Ottos, should they be produced in Australia.

Floral Decorations.—Mr. Wills has now in his various nurseries two acres and a half of glass houses, mainly devoted to the growth of fine-foliaged plants, &c., used in his plant decorations; but, in addition to these, over £10,000 worth of cut flowers, &c., have to be purchased yearly from other growers.

PLATE XCIX.

SELECT CATTLEYAS

(WITH A COLOURED FIGURE OF C. DOWIANA).

THE different species of the genus Cattleya must always be highly appreciated, not only by Orchid growers, but also by every one who admires flowers possessing bright colours and fine forms. So great, however, is the influence of fashion, even amongst plant growers, that the members of this family, handsome though they are, have been somewhat neglected of late years, the more recently-introduced and more popular species of Odontoglossum taking their place. We really cannot blame those who have become infatuated with the mania for the latter genus, and if only two genera of Orchids could be accommodated, we would at once say, select Cattleyas and Odontoglossums; our province, however, is not with fickle fashion, but to bring into notice plants of sterling merit; amongst which must be classed the species of Cattleya now represented.

Flower of Cattleya Trianæ.

Cattleya Dowiana, is probably the largest-flowered and most gorgeous member of the genus; and, up to the present time, extremely rare; it is not a recent discovery, for Warscewicz first found it many years ago, but failed to introduce it in a living state, and it was not until the year 1864 that it arrived in this country; it flowered the following year, for the first time in Europe, in the collection of Messrs. Veitch & Sons, of Chelsea. It undoubtedly belongs to the C. labiata section in habit, although perfectly distinct; it is easily recognised by its stout, club-shaped pseudo-bulbs, which are deeply furrowed, and attain a height of from 12 in. to 18 in., supporting a single, broadly oblong, obtuse leaf, which is very thick in texture, from 6 in. to 12 in. long, and of an intense deep green colour. The peduncle is from three to six flowered, the individual flowers measuring from 6 in. to 7 in. in diameter. Sepals and petals spreading (the latter much the broadest), and of a beautiful, clear, bright nankeen colour. Lip large, the middle lobe very promient and spreading. Colour rich, deep and velvety, veined and laced with thread-like lines of gold. Our figure is from the "Revue Horticole."

C. exoniensis.—This is a garden hybrid, and a bold, free-growing plant, the club-shaped pseudo-bulbs of which produce a single oblong, obtuse, fleshy, dark green leaf. Peduncle from three to six-flowered. Sepals and petals deep flesh colour, tinged with lilac. Lip large, middle lobe golden-yellow at the base, deeply margined with bright crimson purple. It blooms during autumn and winter. Its parents are Cattleya Mossiæ and Lælia purpurata.

C. superba.—This plant is of a wholly different character from those previously named; its somewhat terete pseudo-bulbs are furrowed, and bear a pair of nearly round, thick and fleshy, deep green leaves. Peduncle from three to six-flowered, the individual blossoms measuring from 4 in. to 5 in. in diameter. Colour, in both sepals and petals, an intense, deep purplish-rose. Lip rich magenta-rose and yellow at the base; when vigorous, it will sometimes make two growths in a season, and produce flowers from each; oftener, however, only one growth is sufficiently strong to bloom. The flowers are very fragrant, thick and fleshy in texture; and, consequently, last long in perfection. It must be grown upon a block and placed in the warmest end of the Brazilian house. Native of British Guiana and Rio Negro.

C. amethystoglossa.—This, which belongs to the C. guttata section, produces tall, slender pseudo-bulbs, bearing upon their summits a pair of dark green, oblong lanceolate, and obtuse leaves. Peduncles from four to six-flowered. Sepals and petals thick and wax-like, tinged with rose, and beautifully spotted with distinct spots of rosy purple (in some varieties the spots run into each other and form irregular blotches). Lip rosy violet. It blooms during spring and early summer, and should be grown in a pot. Native of Brazil.

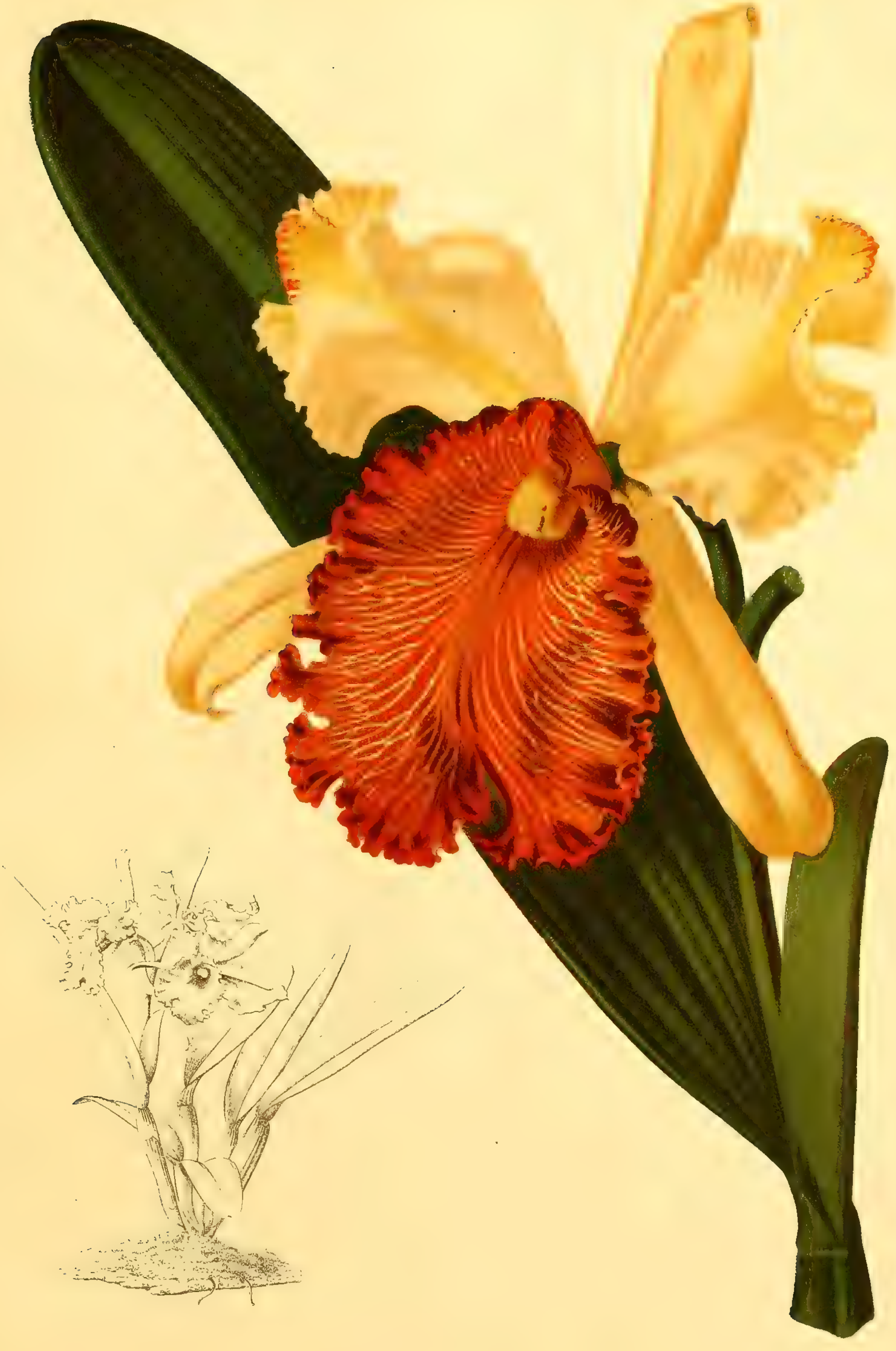
C. Mossiæ.—This is one of the best known and largest-flowered species in the whole genus; it is, however, seldom seen so well developed as it might be, if ordinary care were taken in watering it, and not roasting it, as is frequently done. It is a plant of close, compact habit and a profuse bloomer, the flowers often measuring 6 in. in diameter. In colour it varies greatly, its varieties being exceedingly numerous; the normal colour, however, in the sepals and petals, is blush or lilac, the lip being rich orange at the base, and deep rosy or violet-purple in front. It blooms during the summer months. Native of Brazil about La Guayra.

C. labiata.—This species, which is nearly allied to C. Dowiana, very much resembles that kind in habit and general outline; the flowers, however, are quite distinct. Peduncles three to six-flowered. Sepals and petals broad and rounded. Colour clear rose. Lip large, intense velvety-crimson. It blooms only during the autumn months. Native of Brazil.

C. labiata Warneri.—This varies greatly in the colour of the flowers; but all the forms of it are extremely beautiful. It is compact in habit, and has broad, somewhat flat, bright green leaves. Peduncle from three to five-flowered, the individual blooms measuring from 5 in. to 6 in. in diameter. Sepals and petals broad, deep rich rose. Lip large and beautifully frilled in front, where the colour is intense, deep crimson; base yellowish-white. It blooms during the summer months.

C. Trianæ.—This is also a very variable species; as regards habit of growth and size of the flowers, it resembles C. Mossiæ; but all the varieties bloom in autumn and winter, so that by a judicious selection, a grand display of these gorgeous flowers may be had for many months, if not, indeed, throughout the year; the sepals and petals vary in colour from deep rose to pure white; the lip is usually yellow or orange at the base, the front portion changing from rose to intense deep purplish-violet. Native of New Grenada.

C. Wagneri.—By some this is considered to be a distinct species,

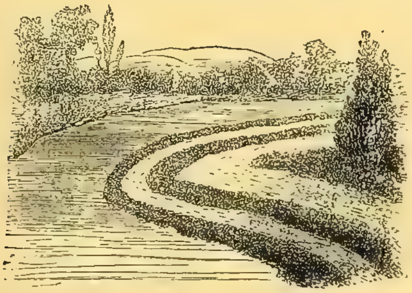


GOLDEN-PETALED CATTLEYA (C. DOWIANA).

but by many only to be a variety of C. Mossiæ, a species with which it is often found growing, and has even been frequently sent home unawares along with importations of this old favourite species or its varieties; it is, however, very beautiful; the sepals and petals are broad and pure white; lip white, stained with pale yellow towards the base. Although introduced some years ago it still remains a rare plant in collections.

As regard cultivation, Cattleya Dowiana does not differ from other Cattleyas, viz., its surroundings must be kept sweet, fresh, and clean; if grown in a pot it should have a good fibrous peat and Sphagnum Moss in about equal parts, taking care that ample drainage is provided. It, however, does best upon a block, although in this way more care and trouble are required to keep the roots duly supplied with moisture. It should be firmly fixed to the block, and its base should be covered with living Sphagnum only. Cattleyas like a plentiful supply of moisture when growing, and even when at rest it should not be wholly withheld. They should not, however, be syringed overhead, because the large sheaths which envelope the young growths catch such a quantity of water that they are often thereby seriously injured. This applies more particularly to Cattleyas in pots; when grown upon blocks, their position enables them to throw off any superabundant moisture, and the young growths in that case suffer no injury. C. Dowiana is a native of Costa Rica, and requires more warmth than C. Mossiæ, C. Trianæ, and many other nearly allied species; it should, indeed be placed in the warmest end of the Cattleya or Brazilian house. It blooms early in autumn, and continues in full beauty many weeks if the flowers be not sprinkled with water. W. H. G.

Garden Design: What to Avoid.—How callous to any true taste some people may be who lay out gardens in the "natural style" is well shown in the accompanying slight sketch. A portion of artificial water, with a too formal margin, is followed by a walk, and that by a road, all side by side. It is an actual scene, and, though it would be hard to equal it, the habit of running a formal walk beside a piece of water is far too common. In connection with this may be named the curb-stone put round the Serpentine, and which is at this moment several feet above the water.



Tritoma grandis.—This takes a prominent rank amongst Tritomas because it keeps so late in flower. I have a plant of it here, not very large, which has flowered ever since September, and even at present it is in full beauty, being furnished with some ten spikes, and still a lot of buds are coming out. The colour is also bright and fine, and the spikes are a little larger than those of T. Uvaria.—Max Leichtlin, *Baden-Baden.*

Spanish Moss as a Window Plant.—The Tillandsia usneoides, or Black Moss, is used very effectively as a window plant by Mrs. Jackson Dawson, at the Bussy Institution, Jamaica Plains. Suspended from an iron nail just over the window, and as seemingly careless as if it were a hank of worsted, or string, without even a stick to attach itself to, is a 4-ft. long festoon of this delicate Bromeliad, and it is in the most thrifty and growing condition; it bloomed freely during the past summer. Twice a week Mrs. Dawson takes it from the nail, dips it in a pail of water, and then lets it drip outside till nearly dry, when she returns it to its position in the window. During bright sunshine the blinds are closed, not with a consideration for the Moss, but as a domestic duty, and though this drapery has been for the past two years subjected to this treatment, it is as living and as life-like as if depended from an Oak, near a Florida swamp, whence it originally came.—William Falconer, *Botanic Gardens, Cambridge, Mass.*, in "Moore's Rural."

ORCHIDS.

SEASONABLE NOTES.

In commencing Orchid culture a selection of species should be made which will bloom at different periods, so that a succession of flowers may be had all the year round, and this should be done with some degree of partiality for those which display their charms through the dull months of winter.

Amongst the best which bloom at this time of the year may be named Oncidium varicosum majus and O. Rogersi; of these the first has been introduced most abundantly, and amongst them many are now in flower that differ considerably in the size and brilliancy of the labellum, but all are beautifull and specially valuable for winter decoration, for with a little management as regards retarding, a few plants will produce a harvest of flowers from October to Christmas. O. varicosum may be grown in a pot or in a basket, and suspended from the roof, whichever way is most convenient; it matters not which as far as the plant is concerned, provided all its surroundings are sweet and clean, and the atmosphere sufficiently humid. Some say that they get tired of Oncidiums because they are all yellow, but O. incurvum is a charming kind the flowers of which are white and rosy pink; individually they are small it is true, but they are produced in great abundance upon long branched spikes; it is now opening its delicate flowers, which will last till January, if not sprinkled with water by the syringe.

In Lælia autumnalis we have a perfect gem, which is throwing up dozens of spikes, each bearing two, three, and five blossoms, which are of large size, measuring 3 in. or 4 in. in diameter; the colour in the sepals and petals is deep rosy-purple, and the lip rose and white with a stain of yellow in the centre. What can be more charming for the decoration of a lady's hair for a ball or evening party, or for cutting for vases? they last long used for either purpose, and in addition to their pleasing colour, they emit a delicate perfume; as regards treatment all that is needed is good drainage, good peat, and living Sphagnum Moss to retain moisture at the roots; plenty of air, too, when growing must be given, and the plants must be placed in such a position that the sun will shine upon them in the morning.

Pleiones, or as some term them Indian Crocuses, are now, and indeed, have been very gay for at least a month past. A beautiful succession of these may be kept up by placing some in a cold house. The brilliant contrast of colours in P. lagenaria and P. maculata is truly charming, whilst the tints of P. Wallichi are soft and rich. These plants begin to push up their young growths immediately after flowering: therefore, when the blooms fade, repot them at once in order that the new growths may reap the full advantage of the fresh soil.

The beautiful Odontoglossum Alexandræ must ever be a favourite with Orchid growers; its large flowers never fail to elicit admiration. Of this Odontoglossum there are numerous varieties, but amongst the whole of them a bad one could not be found. It is now pretty generally known that this Odontoglossum succeeds best under cool treatment. Odontoglossums like abundance of air, but it must not be admitted irrespective of external conditions, for if that were done, they would become starved and shrivelled. The Sphagnum should be kept in a living state upon the surface of the pots, and should never be allowed to become dry at any season; a few plants of this species will keep up a succession of flowers during the winter months.

Calanthe Veitchi is another winter-blooming plant, totally different from anything previously described, and extremely beautiful. It is, however, far too often starved, and consequently does not produce that abundance of flowers which it otherwise would do. The pseudobulbs are from 12 in. to 16 in. high, partially deciduous, or, perhaps, quite so; still it sometimes retains its foliage until after it has bloomed. The flower-spikes measure 2 ft., 3 ft., and 4 ft. high, and bear numbers of rich rose-coloured blossoms. After blooming the plants should be allowed to rest for a short time; then they should be re-potted, using for the purpose loam, leaf-mould, peat, and cow manure in equal parts interspersed with some Sphagnum, and during the growing season they will be benefited by applications now and then of weak liquid manure. W. H. G.

Odontoglossum Rossi majus.—This sturdy and charming little Orchid is now very attractive in various collections.

Angræcum sesquipedale.—A large plant of this remarkable Orchid is showing fine spikes in the Exotic Nursery, at Chelsea. It will form a fine object between the present time and Christmas.

Goodyera Rollissoni.—This is one of the most beautiful of ornamental-leaved Orchids. It possesses a robust habit, and its leaves are of a deep green colour, striped and blotched with creamy-yellow, the under sides being of a rich velvety purple.—S.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pruning Vines.—Amateurs seldom attempt forcing Vines early, and, as a rule, it is better that they should not do so, for, unless a considerable amount of skill and practical experience were brought to bear on the matter, failure would be likely to be the result. Even in the case of thoroughly established, strong Vines in fruitful condition, Grape-growing that entails the necessity of starting the Vines even at the close of the year, is a very different operation, requiring a great deal more skill and watchful attention than what we may term accelerating the natural spring growth by the application of fire-heat towards the end of February or during March, when the vital forces are naturally more disposed to move with less artificial heat. Nevertheless, now that the leaves will have all, or nearly all, fallen, and where the fruit has all been cut, it is better to prune at once. Moreover, I should recommend amateurs, in all cases, never to delay Vine pruning longer than can be avoided. It is through deferring this operation from week to week that the mishap, known amongst cultivators as bleeding, or a copious exudation of the sap at the points where the shoots were severed, takes place, which is one of the most provokingly unmanageable occurrences that can happen, for despite all that is said about the means of stopping it by means of searing it with hot irons, Collodion, painters' knottings, and other styptics, which no doubt, to some extent, tend to mitigate the evil, still, if Vines be pruned at only a short interval before the sap begins to move, it is next to impossible to prevent its loss to an extent that does more or less harm. To make sure in a way that gives the wood sufficient time to heal up the cells severed in pruning, two months should elapse before the Vines are either excited by fire-heat, or come on of their own accord. Another advantage gained by early pruning is, that plants wintered in the houses under the Vines receive so much more light by the removal of the shoots. In the matter of pruning, two distinct methods are practised; one is known as the long rod system, and the other the spur; the former consists in taking up one or two young canes from near the base of the Vine each year, which, at the time of pruning, are shortened back to from two-thirds to one-third of their entire length, the crop being borne on the young rod or rods from the bottom up to where they are cut back, and on the old cane that has produced them above where they were severed, except in cases in which it was cut away as soon as the fruit was removed; in that case the young one is generally left nearly the entire length of the rafter; but this method is now comparatively little practised, and never had very much to recommend it, although by it larger bunches are often produced than by the other system. Amateurs are more likely to succeed under the spur system, though the Vines in time, owing to the length which the spurs assume in the course of years, have a less sightly appearance. This is a fault which can, however, be avoided by yearly cutting from each rod a few of the spurs completely; young shoots will spring from the base where these have been removed, and will take their place, though it often happens that such shoots do not show fruit freely the year after they have been formed. It is, however, always better to prune with a view to a crop than for mere appearance sake, and I should not recommend any bearing wood ever being shortened closer than to where a good plump eye can be retained, even should this be the second above the base of where the current season's shoot had sprung, and in no case to sever the shoot too near the eye that is retained. The advantage of pruning in this fashion is, that the second eye may produce a good stout bunch, wherein the usually weaker bud at the base of the shoot may show no bunch, or one that is a sort of half bunch, half tendril; and if the lower eye shows fruit satisfactorily, then the shoot from the second eye can be removed altogether. Where Vines are strong enough to bear freely, there is little to be feared in their showing a sufficient crop, provided the wood has been fully ripened, unless where over-cropping has been practised, or they have been so grossly neglected as to allow them to become a prey to red spider or thrips early in the season, long before the leaves had fulfilled their allotted functions; neither is it likely that Vines started with the assistance of fire-heat last winter or spring, a considerable time before they would have moved naturally, will be deficient in the wood being well ripened, as the length of time which they have had to make growth and harden up during the recent fine weather, will be almost certain to have secured a fruitful condition. Not so Vines that were allowed to come on of their own accord with solar heat; these, as might be expected from the exceedingly late season, notwithstanding the favourable autumn, have not had enough time to mature the wood whilst the leaves were green and retained their full vitality, for when the wood is not sufficiently matured to produce a crop before the leaves begin at all to lose colour, the case is all but hopeless, and from what I have seen in many parts of the country, more late started Vines in the hands of amateurs are in this state than usual; in this respect it has been one of the very worst seasons that I can recollect.

There is one other point to which I would direct the attention of amateurs in Vine pruning, and that is not to retain too many spurs on each rod; it is a common occurrence to see a spur retained at the greater number of the joints of the rods first made, which is much too close, crowding the roof with small half-developed leaves; whereas, if the spurs be from 1 ft. to 15 in. apart, they are quite near enough.

In the case of Vines that are pruned now with a view to their being started more or less early during the winter, it will be as well to give them their winter dressing at once. Before applying this, it is usual to strip off some of the outer bark, but in this operation I would especially urge amateurs to be cautious, and only take off such as is quite loose and hanging in a dead, stringy condition; the unnatural practise of close scraping, so as to remove the whole of the outer covering almost down to the living inner bark, polishing the rods off smooth like a knotted walking stick, is fatal in its effects of preventing the Vines ever growing and thickening as they ought to do. This scraping process I am aware is often done with the intention of removing the eggs of red spider, thrips, and other noxious insects deposited in the inequalities of the bark, but, in this case the cure becomes worse than the disease. After removing just the loose outer portion as above described, dress at once with the usual mixture of clay, sulphur, a little Gishurst and soot, and fresh cow manure, the latter to help the dressing to stick, stirring all well together, and using it about the consistency of thick paint, brushing it in thoroughly to get it into every crevice, especially about the base of the spurs. After they are dressed the rods may either be tied up in their places under the rafters, or across the house over the front path, if there happens to be one; in this way most light will be admitted to whatever plants occupy the house during the winter.

Where pot Vines are intended to be forced, starting them some time after the commencement of the new year, these should at once be cut back to the required length. It is not well to make them too short, at the same time they are somewhat inconvenient to deal with if left over long; a length of 9 ft. or 10 ft. will generally be found sufficient. It will be well, also, in their case, to dress them over with the sulphur mixture recommended for the permanent Vines; after this, until required for starting, they may be set anywhere in a cool airy house or pit, not allowing the soil to get too dry, nor the opposite extreme of being saturated with moisture. Where Vines have to be bought for either forcing or planting, I should advise their being got in at once, and kept where the roots will neither be subjected to frost nor too much moisture. A too prevalent opinion, entertained by those who have not had much to do with Vine culture is, that if they be kept through the winter where frost cannot reach their roots they are all right, which is anything but correct, as an excessively wet condition of the soil is equally destructive to them as frost. I have frequently seen strong, thoroughly-ripened young pot Vines that, though treated during summer in such a way as to insure their showing plenty of fruit, fail through being placed out-of-doors and exposed to excessive rainfall, which rotted the roots. In the case of Vines for permanent planting in spring, the evil is only so much less that no fruit in the current year is expected from them, but the progress they make through the summer, when their roots are in the state described at planting time, is not more than half of what it otherwise would have been. Even if the pots be laid down on their sides and covered with litter, it frequently happens that the soil gets much too wet through moisture communicated by absorption through the pots. It is a very common occurrence to meet with amateurs whose Vines are a source of continual annoyance to them, going on year after year bearing but very little fruit, and what they do produce of an inferior description, through shanking, a condition which may generally be traced to an unsatisfactory state of the roots, which have got too low down in damp, ungenial soil, or where there is an accumulation of stagnant moisture. In all such cases, instead of dallying with them and looking season after season for more satisfactory results, that are not realised, I should recommend the roots at once to be lifted, and a new preparation made; in the first place there should be sufficient drainage, which may consist of 8 in. or 10 in. in thickness of broken refuse—bricks, burnt clay, clinkers, stones, or anything of a similar nature that is most easily obtained; on this lay a bed of good ordinary new soil, of not a too light sandy character, and, if very heavy and retentive, add a sufficient quantity of sand, lime-rubbish, or burnt clay, to make it sufficiently porous without being too open. It will also be an advantage to add to the soil ½ in. or 1 in. of crushed bones at the rate of about a bushel to every three or four superficial yards of the border. In the absence of these, if the soil be not naturally rich, a moderate quantity of good, rotten manure should be added. The work should be commenced by removing the soil at the furthest part of the existing border away from the front of the house they occupy, using forks for the purpose, so as not to mutilate the roots, which must be carefully dealt with and taken up as entire as the nature of the operation will permit; all the existing outside border ought to be removed, if there be an inside border as well, and if it be ascertained on examination that there is a fair amount of roots in the inside; if the border be all outside, about 3 ft. or 4 ft. of the portion nearest where the Vines are planted should be left undisturbed, as if the whole length of root were lifted so late in the season as this most likely they would not bear much next year, and lifting the lower extremities of the roots and placing them sufficiently near the surface in new soil will generally be found effectual. Before replacing the roots, they may be shortened to about half the length that has been taken up, spreading them out evenly, and bringing them to within 8 in. or 9 in. of the surface; when the work has been completed, on the top of all, 8 in. or 10 in. of litter should be laid, so as to throw off heavy rains and keep out frost, as if the soil were congealed down as low as the roots the latter would be seriously injured. If there happens to be any spare frame lights, wooden shutters, or, failing these, an old oil sheet or anything that will ward off excessive rain, it will be a still further advantage. Many people are deterred from interfering with the roots of unfruitful Vines, and re-making the bed in which they are grown, under the impression that it involves a serious amount of cost and labour; yet such is by no means the case, as there is little difficulty in the matter when new soil can be had without considerable expense. I have found that the best time for lifting Vines is at the close of August or beginning of September, whilst the leaves are fresh and green; but in most cases with amateurs who do not start them early, they are bearing more or less of a crop either ripe or approaching maturity at that time; consequently the work has to be deferred until later on, often till the present season. Vines that are thus lifted should by no means be hurried in the spring, but left to come on with little, if any, excitement beyond that resulting from solar heat.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

November 12.—Digging large pits and filling them three parts full with maiden loam for Peaches, Nectarines, and Apricots. Covering a bed of Seakale with leaves and manure previously prepared for it. Cutting down Asparagus stalks and clearing the weeds off the beds. Covering up Endive and Lettuce to blanch. Washing the lights and paint in the early Peach-house.

Nov. 13.—Shifting herbaceous Calceolarias. Getting early Peach house pruned, and the trees painted with the usual composition for keeping off insects. Giving Cucumbers a little earthing with new loam, adding a little charcoal to keep it open and sweet. Clearing old Raspberry canes off wire trellis. Clearing leaves and rubbish off borders in pleasure grounds, and getting them forked over.

Nov 14.—Earthing up Beans. Turning manure and leaves for hotbeds. Giving Asparagus beds a light forking, and covering them with rotten manure. Making a new Mushroom bed. Tying out the trees in early Peach-house, and otherwise getting it ready for starting. Getting all Endive and Lettuce under glass as fast as room can be found for them.

Nov. 15.—Sowing Mustard and Cress. Potting on late Primulas. Getting into the potting-shed a good supply of different sorts of mould. Emptying Melon pits and giving them a good coating of hot lime. Trenching early Pea border, turning in a good coat of manure that had been previously mixed with salt and soot. Commencing to lay down one-half of the Broccoli heads to the north, and covering up the ground between the rows with half-rotten manure.

Nov. 16.—Potting off Hydrangea cuttings. Getting in 100 pots of French Beans. Turning manure for Mushrooms. Getting Strawberries for forcing into cold pits as fast as they become empty. Looking over Cauliflowers, turning down leaves to protect the heads where required, and moving the most forward ones into an open shed. Raking up leaves in pleasure grounds and collecting them for hot-beds.

Nov. 17.—Looking over Verbena and other cuttings, removing all dead ones and decayed leaves. Cleaning the walks in the pleasure grounds and getting them all rolled down firmly. Getting all rubbish burnt up. Clearing off late Peas, and storing away the best of the sticks. Getting for fruit trees a quantity of loam from the deer park. Cleaning up the kitchen garden walks. Fruit in use for dessert—Pines, Grapes, Pears, Apples, Medlars, Nuts, &c.

NOTES FROM KEW.

SEVERAL good plants of Begonia natalensis, a very useful species for cutting from during the winter months, are in bloom in the stove. The flowers are pure white; leaves and stems rather succulent, yellowish-green, tinged with copper. Palisota Barteri, first discovered near Fernando Po, by Barter, the botanist to Dr. Baikie's Niger Expedition, is attractive on account of its short, thick racemes of beautiful red fruits; it is a stemless, herbaceous plant, with lanceolate leaves from 1 ft. to 2 ft. long, narrowed at the base into a short stalk, the whole being more or less covered with silky hairs. The flowers are pale purplish or white, and are not of themselves very showy.

In the Cactus-house there is a fine specimen of a very striking Bromeliaceous plant, Puya grandiflora, from Mexico. It has a thick, woody branching stem, with dense heads of hard, leathery, recurved leaves, 2 ft. to 3 ft. long, the margins of which are beset with large, hard, pungent spines. The panicles are 4 ft. or 5 ft. in length, and bear very many flowers, which in bud greatly resemble the beak of a bird; and, when fully mature, are more than 5 in. long; the petals are greenish-white tinged with purple, and the sepals, bracts, and almost every portion of the inflorescence, are covered with numberless reddish-brown stellate hairs, which make beautiful objects for the microscope. Crassula rubicunda is a very fine Cape succulent, with large heads of red flowers. In addition to its welcome colour, its compact habit and the property it has of remaining so long in bloom, render it a desirable acquisition to our stock of winter-bloom. plants. Two Ceropegias, C. Gardneri from Ceylon, and C. elegans from the Neilgherries, are also in flower. These very strange Asclepiads have twining stems and opposite leaves; their bent corollas suddenly narrow into a tube about 1 in. long, then again enlarge and divide into five segments, which unite at the top (in some species forming a large umbrella-shaped head). The tips of the corolla segments of C. elegans are deep green, then comes a blotch of chocolate-red, followed by a deep band of white; the tube is greenish-white spotted with brown. C. Gardneri has purplish-coloured flowers.

The Gesneraceous collection, for the most part in one of the warm compartments of the New Range, is also worth a journey to see. It seems strange that plants exhibiting such brillancy of colours, and being so very floriferous, should not be more extensively cultivated for the decoration of our stoves at this dull period of the year. Besides neary all are of the easiest culture; they simply require good rich loam and leaf-mould, and perfect drainage; during the season of rest the tubers can be kept in dry sand in any cool, dry place. The following Nægelias have all been raised and distributed by Van Houtte, at whose nursery considerable attention is paid to these very beautiful plants. In addition to the varied colours of the flowers, the foliage is in many instances very handsome. N. Leichtlini has a pure yellow flower shaded at the top with deep red; Morgenlicht is a very fine golden-yellow variety; Madame Paul Boutez has pretty speckled flowers, in which bright yellow, pink, deep scarlet and a bluish tinge are all represented; Sapho has a white corolla lightly tinted with rose, throat canary yellow. Intense vermilion and citron-yellow struggle for the mastery in Grand Mogol. Chair et Capucine has magnificent foliage; the flowers are a warm, flesh-colour bordered and spotted with red. The Mexican Eucodonia Ehrenbergi, perhaps better known as Scheeria lanata, is very attractive. The robust, erect stems, as well as the leaves, are more or less covered with soft, whitish hairs, and the lilac-pink white-throated flowers, veined with purple, mark it as a most desirable stove plant. Plectopoma triumphans is an abundant bloomer of good habit with lilac flowers, the interiors of which are white and citron-yellow spotted with purplish-red. P. Colibri has charming rose-coloured corollas, but its habit is not so good as that of the last mentioned plant. A large-flowered Tydæa, T. Vesuvius, raised by Thibaut and Keteleer, has dark red flowers barred with black.

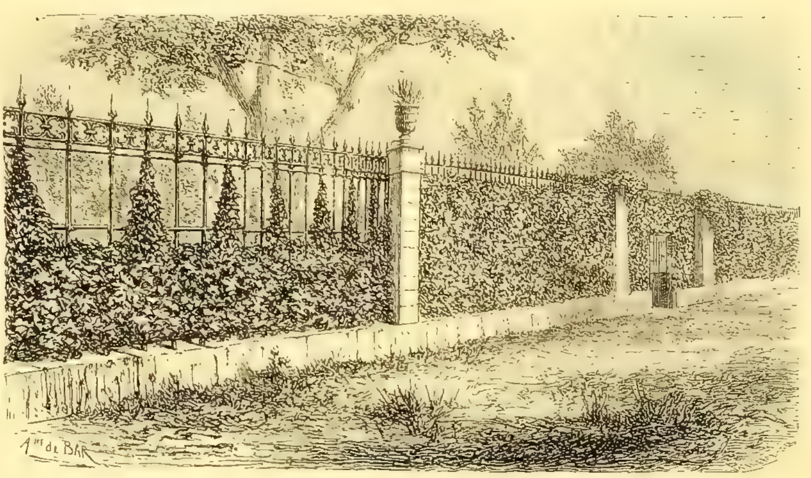
Perhaps the freest winter-flowering Bromeliad is one called Pitcairnia muscosa, the smallest member of the genus to which it belongs; it has tufts of narrow leaves, from amongst which spring the panicles of red flowers. Another Bromeliad, Chevalliera Veitchi, introduced this year to cultivation by the enterprising firm after whom Professor Morren has named it, is a real acquisition, not only for its novelty, but also for its intrinsic worth as a stove plant. It has a dense, basal rosette of leaves, 12 in. to 15 in. long, by 2 in. broad; the scape, about 1 ft. high, is surmounted by an oblong flower-head, 4 in. long and somewhat less than 2 in. in diameter. The closely-set, bright scarlet, horny, toothed bracts, from the bases of which spring the flowers, last a long time in full beauty, and are much more showy than the flowers themselves. It is well figured in the "Botanical Magazine" for the current month, where, however, Chevalliera is only admitted as a section of the large genus Æchmea.

The prettiest Amaryllid of which Kew can at present boast is Urceolina aurea, from Peru; it has heads of charming, pendulous, yellow flowers, about 2 in. long, the cylindrical green tube is 1 in. long, then comes the ventricosely bell-shaped upper portion, the mouth of which is contracted, and has short, reflexed, green segments.

In the Mesembryanthemum-house one of the most beautiful species of the genus is now in flower; it is M. fragrans, and well does it deserve its specific name. The fine bright yellow blossoms are 3 in. across, and are deliciously fragrant; the leaves are few in number, extremely fleshy, and keep close to the ground. Very similar is M. grandiflorum, which, however, has flowers only half the size of the last-mentioned species. M. felinum is a pretty dwarf yellow-flowering species, and the leaves are furnished at their edges with formidable-looking teeth. G.

PARK GATEWAYS.

Every one who is fortunate to appreciate the picturesque of effect and of association, knows how much of either kind of interest is contributed by the entrance gateways of old family estates which form incidents in a drive along an English country road. These are mostly in more or less classic taste, for it was only in post-Gothic times that the domestic landscape, as one may call it, of the private park, came into being as an essential feature in connection with a country residence—an appendage of the "mansion" which succeeded to the "castle." There are instances where attempts have been made to preserve the castellated style, the outer signs of feudalism, when the reality is extinct; and very unfortunate is the effect. If thoroughly carried out, the structure has a forbidding and inhospitable aspect; if badly and insufficiently done, it looks simply futile; but the old classic park entrances exhibit a great deal of variety, and it is surprising how well they seem to group with English park scenery and foliage. We find sometimes a solid and dignified structure, like the one (no matter where) which suggested these desultory remarks; a mass of solid ashlar masonry on either side of the gateway, variously grey and green with Lichen Moss, divided out into regular cubes by the thin black lines of jointing, from which the pointing mortar has long disappeared; heavy solid-looking half-columns, with Ionic capitals, forming the main decorative feature in either block; and through this framework of masonry we look down the vista of a long, straight drive, thickly bordered with trees in the rich tints of autumn foliage, or interspersed with dark evergreens. The house to which it leads is concealed from view, so that there is about the effect something suggestive to the fancy—a pleasant touch of theatrical unreality; the road may lead anywhere—to some enchanted palace if we like. The columns seem to form a kind of proscenium ornament, and we might expect to see the hero and heroine of the romantic opera pass across between it and the back scene. But perhaps we are getting a little too fanciful; all we mean to say is that the effect is very charming, both to the eye and mind, and that it is worth while to notice how much may be made out of such merely necessary facts as a gateway and a road to an house; and, in fact, the associations connected with these specimens of gateway architecture are really domestic rather than melodramatic. The family arms, the family motto, more or less ingeniously introduced on the piers, or in the design of the gate, constitute not a little of the picturesque sentiment connected with them; but there is a great deal of variety of architectural treatment and design to be met with amongst them. One shows a heavy and massive pediment with an arch under it for the gateway. Another aims at elegance and grace, not without a certain stateliness, too, and the gate is flanked by a light, open colonnade, on a semi-circular plan, terminating in the gate piers, the cornice and blocking of which are carried also round the semi-circle, and form at either extremity of it the pedestal for a couchant stag, which will probably be found to be better carved and more artistic in feeling than one would at first expect. This semi-circular type of extrance, providing a wide space between the public road and the gate, is a not uncommon form, and is always effective in general appearance, giving a look of spaciousness and dignity, whatever may be thought of the details. In another we find a different, a more homely but still dignified character imparted by a heavy rusticated architectural treatment, not so refined and stately certainly as the columnar architecture, but having a character of its own, peculiarly English; heavy piers crowned by an urn and a wreath, or a nondescript dog or lion with a shield, and more picturesque no doubt in its weather-stained green and black and grey condition than when fresh from the mason's hand. Yet in most of these show structures there is a largeness of scale in the detail, and a sort of execution entirely the reverse of "scamped," which gives them a satisfactory and thoroughly architectural expression, and the sculptured accessories generally are by no means despicable in style and execution. In regard to this last point we certainly have not improved upon our ancestors in decorative treatment of entrances, except in some special case in which ability of a high class has been employed upon the sculpture, and truly at this moment we hardly recall any such case. We do not recall instances in which the efforts to do something unusual in the way of sculptured decoration in such positions has resulted in the most dire vulgarities, though it is right to add that these are probably not chargeable upon the modern architect, but rather result from the desire to try how he can be dispensed with. It is a trifle off the line suggested by our title, but we cannot help noting a contrast between old and new taste in the matter of gateway decorations which may be seen in the once classic ground of Regent's Park. The older terraces along the east drive, parallel with Albany Street, exhibit a good deal of the old classic and not over-convenient formality of design, but they are not without dignity of arrangement; and in the case of Chester Terrace, which stands back from the road, there is something really effective in the large entrance archway, flanked by classic columns, through which access is obtained at either extremity to the terrace drive. A little way below Chester Terrace, with its pediments, and "orders," and "attice," according to rule, is a large terrace of new houses, of a would-be-Gothic type, staring and obtrusive in style, also with its drive and its entrance gateways, on each of the piers of which have been set three wonderful females, back to back, in classic drapery, and depicted with what has evidently been intended for a smile of welcome on their lovely countenances; but, whether owing to the carver's (we cannot say sculptor's) innate vulgarity of conception, or his inability to realise his intention, the smile takes the form of a leeking smirk of enticement, which certainly would be, as we heard a lady resident of the neighbourhood complain, "absolutely improper," if it were not a little too ridiculous for that. Such a piece of vulgarity as this would, at all events, have been impossible in the period when the gateway designs of which we have been speaking were produced.



Ivy: a sketch by A. De Bar; Auteuil, 1877.

In recent days we have taken more to Gothic entrances, and these have this advantage, that if there is a house flanking the gate at either side, it can be obviously shown as a house or cottage, and not disguised behind a screen of classic podium and column and cornice. The Gothic entrance may be said to be more domestic in character, and no doubt it may be so designed as to combine dignity with this, but too often it is but a mean and characterless erection, wanting in largeness and breadth of treatment; an impression still further emphasised by the effect of gates of elaborately twisted and spiked ironwork, which have an appearance quite out of keeping with the traditional sentiment of an English country mansion, importing into its environs suggestions of Birmingham, and an appearance of ostentation and unrest, a desire to be handsome, which is what the old style of gateway seldom or never suggests. The entrance gateway is an opportunity for much that is novel, and at the same time graceful and dignified in design; and towards realising these qualities in the approaches to modern mansions there is a good deal to be gathered from the study of those of the last and the early part of the present century. We may not imitate their details or the faded character (artistically speaking) of the ornamental accessories; but in regard to general treatment they afford much suggestion. Two things are to be observed in contriving park entrances—that they should always be so planned as to give a wide space in front of the gate and throw the latter well back from the road; and that if an arch is thrown over the gateway, necessitating a somewhat large erection, it should be flanked in its immediate vicinity by walls sufficiently high and important to give something like an adequate support to the entrance, and give a kind of reason for the arch. A lofty arch set up to drive under, with only a low fence or wall on either side of it, looks absurdly pretentious and unreal, unless it be a *bonâ fide* triumphal arch. The addition of a lodge or house on either side as part of the design, and incorporated with it, gets over this difficulty, and furnishes the requisite *appui* to an arched entrance; but it is hardly justifiable to make houses which are not really wanted for this purpose of mere effect, as we sometimes find them. *On the whole, except in cases when the thing is done on rather a large and stately scale, it is perhaps well to let a gateway be simply a gateway*, and trust for effect to the way it is arranged and lead up to, and the manner in which the architectural details flanking it are treated. By way of a new idea, however, for this kind of design, we have sometimes thought that the Indian gate-pyramids afforded a suggestion worth working out in another form, and with another class of detail. Such an idea would be only suitable, of course, in connection with the grand entrance to a large and stately domain, in which case the pyramid might have an architectural meaning, as serving to indicate from a distance the position of the main entrance. There are many other forms of gateway design existing in the architecture of various countries and nations, which would afford opportunities for a fresh point of departure in the architecturel embellishments of an entrance; but those of our own country merit more attention than they have received, and often afford very pleasing specimens of purely artistic architecture.—"Builder." [Like the man who listened to a somewhat long-winded song, and preferred the last note to all the rest, we think the writer of the above interesting article has put the whole gist of the matter into the sentence we have italicised. Nothing can be more ridiculous than to plant a magnificent arch gateway fit only for some baronial castle, by the side of a country road, flanked by low hedges on each side.—Ed.]

THE FRUIT GARDEN.

OCTOBER AND NOVEMBER PEARS.

The list of October and November Pears is almost endless; the following are illustrations of a few of them, and, as the notes concerning them are made from personal observation, those who may be contemplating the formation of a collection may derive assistance from them. Dr. Lentier (fig. 1) is a moderate-sized fruit, regularly Pear-shaped, and very handsome; skin shining and pale yellow when fully ripe flesh white, slightly aromatic, buttery, and melting. We have it growing in the form of bushes on the Quince stock, conditions under which it is most fruitful; it generally ripens about the middle of October. Soldat Laboureur (fig. 2) is a large and very handsome Pear; skin smooth and russetty, with a tinge of red on the side next the sun; flesh very rich, sugary and juicy if caught at the proper time, but the fruit soon rots at the core, and will not keep a week after it is fully matured, which is generally about the end of November. The tree is a free grower and of good habit. Delices d'Hardenpont (fig. 3) may be classed as equal to such kinds as Marie Louise, Doyenné du Comice, or Winter Nelis, and therefore worthy of a place in every good collection. It is of moderate size generally, but occasionally large; skin green, covered with patches of russet; flesh melting and highly perfumed, and the fruit will keep for a long time after being fully ripe, a consideration

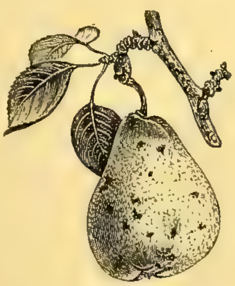


Fig. 1.—Dr. Lentier.

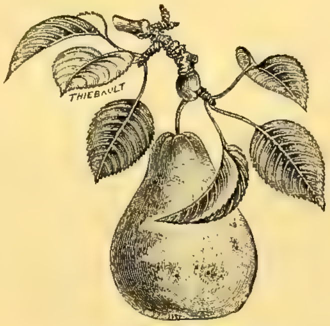


Fig. 2.—Soldat Laboureur.

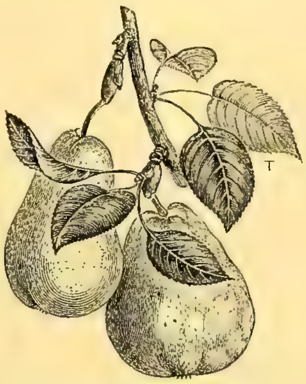


Fig. 4.—Delices d'Hardenpont.

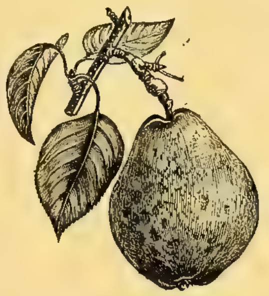


Fig. 4.—Nouveau Poiteau.

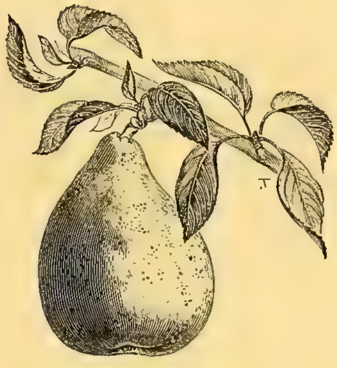


Fig. 5.—Beurré Clairgeau.

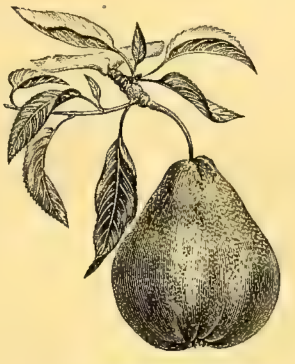


Fig. 6.—Alexandrine Douillard.

of great importance in the case of any Pear. Its season is about the middle of November, but we have had it at Christmas. It is most fruitful on the Quince stock, but it also does well on the Pear. Nouveau Poiteau (fig. 4) is a large Pear of exquisite quality, but it possesses the great drawback of not keeping well, in this respect it is most deceptive, and therefore not to be recommended, though the tree is of fine habit and free growth. Beurré Clairgeau (fig. 5) is a grand market growers' Pear, being productive and excellent as regards appearance; flesh second rate in flavour, being sweet, but gritty and coarse grained. It does well either as standards, bushes, or espalier fashion. It ripens generally from the middle to the end of November. Alexandrine Douillard (fig. 6) is in every respect an excellent Pear. It is one of the most certain bearers with which I am acquainted, the fruit is large; skin greenish-yellow, suffused with red on the sunny side; flesh white, melting, and richly perfumed. Its season of maturity is November, but it will keep for a considerable time after being fully ripe. The tree is a free grower and well adapted for training in the form of bushes or pyramids.

W. W. H.

FIELD CULTURE OF HARDY FRUIT TREES.

(Continued from p. 428.)

Distances at Which to Plant.—As a rule, tall fruit trees are grown too close together. They require plenty of air and room, otherwise they only bear fruit on the ends of the branches. The following table will give the proper distances apart for planting the ordinary kinds of fruit trees in different situations in soils of ordinary character:—

Sorts.	Planted in single lines.		Planted in rows.		Planted in orchards.		Planted in cultivated fields.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Apricot	16	3	19	6	26	0	32	3
Apple	26	0	32	6	39	0	48	9
Chestnut (grafted)	26	0	32	6	29	3	29	3
" (ungrafted)	32	6	39	0	26	0	26	0
Cherry (sweet)	19	6	22	9	29	3	39	0
" (Morello)	16	3	19	6	26	0	32	6
Mulberry	29	3	20	9	29	3	29	3
Walnut (grafted)	26	0	32	6	29	3	29	3
" (ungrafted)	32	6	39	0	35	9	35	9
Pear	22	9	29	3	35	9	45	6
Peach	19	6	22	9	29	3	39	0
Plum	16	4	19	6	26	0	32	6

We must also take into consideration various other circumstances which modify the rules laid down above, such as the richness of the soil, its relative dryness, whether it is situated in a hollow or in the open. In any case, it is better to err on the side of too much room than too little, for it has been shown that, with half the number of trees planted in a given area, a much larger yield of fruit is obtained than from double the quantity crowded together in the same space.

Mixed Planting.—The large spaces between the trees should not be allowed to remain unoccupied, as smaller or less vigorous varieties may be planted in the vacant ground, as shown in fig. 37. If the plantation has been made in quincunx, the extra trees may be disposed as shown in fig. 38. Of course, as soon as there is any danger of the new trees hurting the old ones, they should be transplanted to another situation. The extra trees are marked with an *x* in both the cuts. The Pear grafted on a dwarf Quince is very suitable for growing in this way. During the first few years vegetables of all kinds may be planted between the trees, more especially if they require copious manuring from time to time. Spergula, Lupins, and similar forage plants may be sown between the trees of a new orchard, and dug in when in full growth, with great benefit to the land. In dry and poor soils this method is often surprisingly successful. In the case of poor or worn-out soils, in which it is desired to plant young trees, Potatoes, or some of the plants mentioned above, should be planted and dug in during the first year. Wherever trees are found to be injurious to herbaceous plants, it is entirely on account of their being planted too closely together. When at a proper distance apart, the shadows of the trees do not fall continuously, and the herbage receives alternately the benefit of the sunlight, the shade, and the air. It is really only when fruit trees form a thick shade overhead, so that there is an insufficiency of light and air, that they prevent the growth of herbaceous plants. The cultivation of fruit trees in fields and meadows undoubtedly diminishes their yield; the space between the trees should, therefore, be greater under these circumstances than when grown in orchards. In such situations, Apple and Pear trees should not be planted closer together than 45 ft. or 50 ft., the distance for other fruit trees being in proportion, according to the table on this page. Grown in arable land, in favourable years the yield will be large, and the fruit finer in flavour, than those grown elsewhere, owing to the soil being well manured and ploughed periodically. In meadows, the fruit will not come to such perfection, for obvious reasons. Plantations made on the borders of arable land, are deserving of attention, and might well replace the useless trees now so much in use for making hedges. Lines running east and west give the best results, as the trees receive an equal amount of sunshine on both sides, besides which they mutually shelter each other from the northern blast. It may also be borne in mind that the trees cast no shadow on the south side. In planting avenues, the tenderest varieties should always be planted on the sunny side of the line. Winter Pears, for instance, and trees whose fruit is prone to drop, should be sheltered as much as possible.

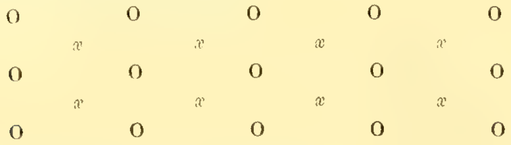


Fig. 37.

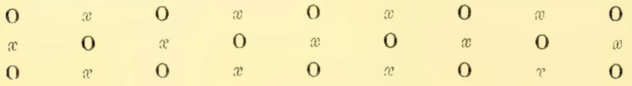


Fig. 38.

Manure.—The best manure for fruit trees in general, is stable manure mixed with vegetable refuse, weeds, meadow earth, rotten turf, river and ditch mud, &c. These materials should be piled in heaps some time before they are required, and constantly stirred and watered with liquid manure of some sort. Pure animal manures should not be used at first, as they are liable to cause the tree to grow too fast at the expense of its roots. An exception may, however, be made in favour of bones, horns, feathers, hair, wool waste, &c., which are slow and gentle in their action. This kind of manure cannot be used too largely; for instance, some trees planted in poor land gave wonderful results by being manured with woollen rags, at the rate of 5 or 6 lbs. per tree. Lime is, perhaps, too little employed in the cultivation of stone-fruit trees, apparently from its nature not being so fully appreciated as it ought. Lime works a most beneficial change in heavy, cold, and damp soils; it renders them lighter and warmer. Being strongly alkaline in its nature, it acts as a caustic on other manures, causing them to be absorbed more easily. It also attracts, mechanically, the gases in the air and otherwise greatly influences the health of the tree and the yield of fruit. Lime has the same effect on clayey soils, especially when well worked in. Lime is also of great value in destroying the growth of Moss round the roots of orchard trees. It is impossible to grow fine qualities of fruit in soils which are deficient in lime. All districts famous for their fruit, are more or less calcareous in their geological structures. No fruit tree should ever be planted without mixing a couple of good shovels of lime with the soil in which it is to grow. Old plaster and mortar, so much recommended as manure for fruit trees, owe their efficacy to the lime which they contain. Wood and coal ashes are also valuable in their way as auxiliaries. Old-fashioned growers have an evil habit of filling the hole in which the tree is to be planted, with a large quantity of manure, as if they indended to supply the tree with manure for the whole of its natural life; but manure buried in this way at a great depth, and out of the way of air and moisture, does more harm to the tree than good.

Choice of Trees.—Trees for permanent planting should have crowns of two or three years growth. The bark should be smooth, the stems strong and straight, thicker at the bottom than the top. Trees which have a circumference of say 4½ in. or 5 in. at 3 ft. from the ground, and are from 7 ft. to 9 ft. high, give good results. It is, however, difficult to procure young trees of this size, most of them in the market being much smaller. The planting of old trees present too many difficulties for description here. The amount of wood shown by the tree should be quite a secondary consideration, the real points to be regarded are the height and form of the stems, the suitableness of the variety, and its general healthiness. At one time as long as a tree looked strong, and had a good bushy crown its other merits were unregarded.

Transplanting.—This operation is generally carried on with great carelessness, the roots being wounded and bruised, or even chopped off as if they were a mere secondary consideration. To transplant a tree properly, a circular trench should be dug deep enough to reach the lowest roots, so that the tree may be lifted without any large amount of force being necessary to free them from the surrounding earth. As much of the earth adhering to the roots as possible should be procured, and the place to which the tree is transplanted should be as near as possible, so that the tree may suffer as little as may be. If necessary, a tree may be transplanted before it has lost all its leaves, if the precaution be taken to pull them off immediately before or after transplanting. The best way is to pull them off at intervals before the tree is removed; it is, however, best to wait until the tree has shed its leaves of its own accord. When young trees have suffered during their journey from the nursery they should not be planted immediately. The roots should first be dipped into a thin lute formed of clay and cow manure, and put aside in a pretty dry airy place. In the case of trees which have been planted in the same place for several years, a hole should be dug round the tree the year before the plantation is to take place, cutting the ends off the roots, and caving under the tree itself. The circular trench thus formed should be lightly filled up with earth. In consequence of the ends of the roots being cut off, the tree will throw out a number of small radicles. The next year the rest of the earth is removed, and the tree may be transplanted under the best conditions. All strong healthy trees, especially Apple trees, will bear transplanting up to the time they are eighteen or twenty years old. If intended for transplanting, the larger branches should be allowed to remain intact, the smaller ones only being thinned out from the centre of the crown.

Time for Planting.—Trees which bud early should be planted from the end of October to the end of November in light and dry soils. As for trees which bud late, especially Mulberries and Walnuts which have fleshy roots, as well as for trees which are intended to be planted in strong, damp soil, spring plantations may be equally recommended. In spite of the advantage of late autumn planting it is always better to stretch a point, and plant at the beginning of the year rather than defer it for a whole season.

Before planting, the whole of the exposed portions of the roots should be examined, the rotten parts pruned away, as well as those which show a tendency to descend. The creeping roots, on the other hand, should be preserved intact. Clean cuts soon heal, and form large quantities of fibrous rootlets. In the case of old trees, or of trees which show but little tendency to ramification, it is often advantageous to make annular and longitudinal incisions in the roots, in order to provoke the formation of new ramifications. The ground being well prepared, it will be necessary to dig a round hole, the bottom of which should be raised in a conical form, so that the roots may be easily put in their proper positions. A puddle of clay and cow manure should be used in the case of all trees, whether young or old, as it greatly encourages the growth of new roots. The tree being placed in its proper position, the roots are spread out and covered with rich soil, which will facilitate the growth of the new roots and rootlets, the hole being filled up with earth, beneath which a layer of manure has been placed in such a position as to be only a few inches below the surface. This part of the work should be performed by at least two workmen in order to ensure complete success. Manure for fruit trees should never be turned under the roots, but over them, and as near the surface as possible. The trees should be moved backwards and forwards several times while the earth is being filled in, otherwise cavities will be left between the roots. Great care should also be taken to pull out the roots to their fullest extent. They should be laid as flat as possible, and near the surface of the earth. The soil should also be frequently trodden down with the feet during the filling in. The amount of sinking which takes place after heavy rains should be allowed for, otherwise the roots will ultimately become buried too deeply. The point of junction between the roots and the trunk should always remain above the surface; deep planting is most injurious for all descriptions of tree, no matter how good the soil may be in which they are planted. This is a very important matter in the case of heavy ground in low situations, where it is necessary to plant on hillocks. Mr. Van Houtte adopted a system of planting which appears to have its advantage. It consists in leaving a drum-shaped hillock in the middle of the puddle in which the tree is to be planted. The hillock is lowered below the surface of the soil, the top being flat. If the earth is light it should be well beaten before digging so that the hillocks may be as hard as possible. The tree is then placed sitting as it were on the top of the hillock, the rest of the operation being finished in the usual manner. The roots being placed in this position do not descend, but spread parallel with the surface of the earth. Planted in this position they act as supports to the tree from the very first day of planting.

Planting above the Level.—One of the greatest improvements lately introduced into the art of tree planting, whether for use or ornament, is that of planting on hillocks or mounds, raised more or less above the level of the soil, according to circumstances. When we attentively consider what goes on in Nature, we shall find that trees, placed on slight elevations. are always more vigorous than those sunk in hollows, even when the former have part of their roots exposed. When, for any reason, the lower portion of a tree above the root is covered up with earth, the tree always suffers: except, indeed, it belongs to one of those varieties which have the power of emitting roots from the trunk when it is covered with earth. On the other hand, where the ground is lowered and the earth round the tree is shaped into the form of a hillock, the tree does not suffer, or if it does, only during the first year. Loudon in his "Villa Gardener," tells us that deep planting is the cause of the decay of numberless fine trees in old gardens. Baron H. E. Von Manteuffel, a large forest proprietor, has shown the advantage of the system of planting on mounds, especially in filling up empty spaces in forests. In hillock planting, the only thing to be feared is that the tree will grow crooked during the first few years; but this may be easily avoided by proper staking and training. No matter what system of planting be adopted, trees must be properly staked and trained, so that the only objection which has been raised to hillock planting vanishes immediately we come to consider the subject. The ground must, of course, be levelled before commencing to plant by this method; after which, the trees are placed in the position they are to occupy, the roots being covered with rich earth, turf sods, a layer of manure, and a final covering with ordinary soil. Frequent treading down must on no account be omitted.

After Operations.—Immediately after the plantation is finished, the surface of the earth round the tree should be covered with rough straw or stable manure, which must be kept up during the whole of the winter following, so as to preserve the roots from frost, as well as to ensure their re-striking as soon as possible. This protection may be renewed year after year with great advantage, even in very dry situations. Straw may be replaced by Grass cuttings, water weeds, decomposed tan, Hop waste, or Flax and Hemp refuse. In the farmyard, where fowls are apt to lay the roots of trees bare by constant pecking, they should be protected either by brick or tile paving or by covering the lower portion of the trees with faggots, branches, Rushes, &c.

The Formation of the Crown of the Tree.

Although a well formed crown need not be perfectly symmetrical, and may, to a great extent, be allowed to grow in a natural way, certain rules ought to be observed in helping the tree to form a mass of branches suitable later on for bearing productive shoots.

First Pruning.—By properly pruning the principal shoot, two, or better still, three, buds should be left at equidistant spaces round the stem, as shown in fig. 39. They should not be too near the graft, otherwise they will produce a large nodosity, which is equally objectionable to the sight, and prejudicial to the tree. For this reason, we should have but a single shoot to each graft. Commence the graft upon this at a distance of from 4 in. to 6 in. above the place where the graft is inserted. The pruning of the graft for the formation of the first main branch of the tree, should be performed in a particular manner, as shown at *a* fig. 39. In cutting the principal shoot, in order to obtain the first main branches, it is necessary to preserve three shoots (*b*, *c*, and *d*). Three well-placed buds are chosen, and the top of the shoot is cut down to within 4 in. or 5 in. of the uppermost bud, the buds between being rubbed off. By this means, a small shoot is left above the last bud, which is cut off the following year, during the winter pruning. This little shoot forces the upper shoot to grow vertically instead of horizontally, and it also prevents the latter from becoming stronger than the other branches. The three first branches of the crown ought always to be of equal vigour, and placed in a triangle. By paying a little attention, it will soon be perceived that when trees are pruned immediately above the bud, which ought to develop into the first shoot (see fig. 39), generally grow in a flattened form, in which case it is extremely difficult to induce the shoots to grow, The formation of the first branches by this method of cutting, is of great practical value, whether we want to grow only a few young trees, or to produce a large number for the nursery.

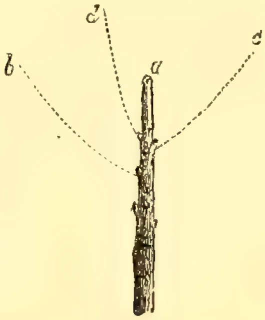


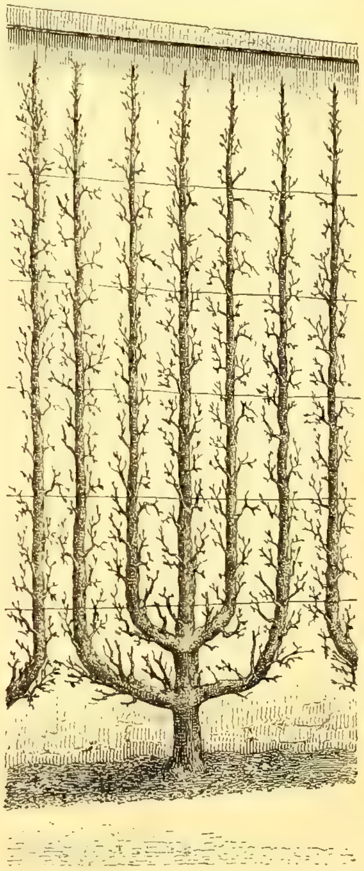
Fig. 39.

(To be continued).

Best-bearing Apples and Pears.—Lord Suffield, on the Crab stock, bore this year a full crop of fine fruit, as did also Manks Codlin on the same stock, and likewise Cellini; on Hawthornden there was a fair crop, but spotted; Wyken Pippin bore a full crop, as did also Warner's King and Russian Apple, the last a very pretty early Apple, but not first-rate; on Northern Greening there was a full crop. The above are all dwarf bushes. Calville Blanche, on the Paradise stock, on a south wall, ripened a full crop of fine fruit. Of Pears, the best were Duchesse d'Angoulême, on the Quince stock, in the form of a pyramid; Beurré Hardy, on the same stock; Seckel, on a wall with an east aspect, bore a good crop; as did also Winter Nelis, on a wall having the same aspect. Pears, with these exceptions, have been a failure, there being only odd ones here and there on the trees. On pyramid Pears that were well protected, there was a good show of bloom, and fruit set, but it all fell off. Josephine de Malines, Gansel's Bergamot, Beurré de l'Assumption, Beurré d'Aremberg, Knight's Monarch, Marie Louise, Doyenné du Comice, Pitmaston Pear, Durondeau, Leopold IV., Louise Bonne of Jersey, Bergamotte d'Esperen, and Beurré Clairgeau, although well protected with hoops and Spruce boughs, all failed.—David Lumsden, *Bloxham Hall, Lincoln.*

New Vine Disease.—At the last meeting of the Woolhope Club (Oct. 4), M. Maxime Cornu, of Paris, described a new Disease of the Vine, which had been brought under his notice in plants from the neighbourhood of Narbonne. It is there called Anthracnose, because it appears like dark burnt spots on the leaves and branches of the Vine, and even on the Grapes themselves. In the first or conidious stage the spots are white, and in the second stage they present the blackened and charcoal-like appearance that has given the popular name to the disease. It belongs to a fungus named by Berkeley and Curtis Phoma uvicola. Its third condition is yet to be observed. The disease has been introduced into France with young plants from America, and has now been observed in several places. The Vines are also attacked by another fungus named Cladosporium viticolum of Cæsati, which is recognised by its dark brown velvety spots, which have been known for some years; and now it has been pointed out by Dr. Farlow, at Boston, that the French Vines in America are attacked by an ally of the Potato fungus in Peronospora viticolum, which attacks the young shoots and branches in the most destructive manner. M. Cornu dwelt on the importance of the most careful attention to the study of these diseases, and called for the assistance of English mycologists in their observations. The remarks were illustrated by most carefully executed drawings of the fungi named above, and their effects on the leaves, stems, and fruit of the Vine.—"Florist."

Erect Training.—Mr. R. Gilbert having expressed some doubts as to the distance being sufficient between the branches of the Pear-trees figured on p. 393, we may point out that the photographer, wishing to show the wall in its length and height, placed his apparatus too much at the side to allow of the spaces between the branches being fairly represented in the engraving. The accompanying cut from a much lower, but also remarkably well-furnished wall, gives a better idea of the spacing of the branches. It is from a photograph taken in April last.



Casimiroa edulis Fruiting in Ireland.—This so-called Mexican Apple has recently been fruited in the gardens at Kylemore Castle, Galway, the seat of Mitchell Henry, Esq., M.P. The gardener, Mr. Garnier, states that the plant, which was sent out by Mr. Bull some nine or ten years ago, is now a tree about 10 ft. high, with a clear straight stem and a beautifully-formed head, about 5 ft. through. It seems to require some years before it produces fruit. Two years ago it showed some small fruits which did not come to maturity, but others produced this year grew to the size of a good specimen of a St. Michael Orange. The tree is said to be very prolific. Mr. Garnier considers it the best of all the tropical fruits with which he is acquainted. It begins to grow at the end of September, just as the fruit is gathered, and swells very rapidly, soon completing its full growth. The fruit is borne on the two-year-old wood, not in the axils of the leaves; it is of a greenish-yellow colour when ripe, and has a delicious melting flavour, like that of a Peach. At Kylemore it is grown in rich, perfectly-drained friable loam, mixed with a little peat, and in a large, lofty span-roofed tropical house, which is never heated much beyond an intermediate temperature. Though it has received the name of Apple, the Casimiroa is more strictly an Orange. The foliage and the outer part of the flower are studded with transparent oil-cysts, as in the Orange, but the leaves are digitate, and the flowers are less conspicuous than those of true Oranges. The tree is a native of Mexico, where it is found in a wild and cultivated state; it has also been widely distributed through various parts of America. Seemann, in the "Botany of the Herald," says it has a remarkable tendency to accommodate itself to different climates; it grows from the lowest coast region to an elevation of 7000 ft., producing everywhere an abundant harvest. The fruit is said to produce a somniferous effect, and the seeds are reputed to be dangerous, so that caution is needed in the use of it. It seems likely that in many parts of India, the Cape, and the Australian colonies it would prove a valuable introduction.

Cure for the American Blight.—I find that this troublesome Apple-tree pest can be readily exterminated by the use of common train oil. Some of the best kinds of dessert Apples are here trained to a low wall, with an east aspect, and had, for several seasons, been much infested with American blight, while several remedies had been resorted to, without, however, effecting a cure, or at all mitigating the evil. Early in March last the trees were unnailed from the wall and pruned as usual, but before they were again secured to the wall, they were thoroughly painted over with train or fish oil. This was applied with an ordinary paint brush. The trees had much the appearance of having been varnished, and some apprehension was felt as to the safety of the bloom-buds, which were considerably developed at the time at which the oil was applied. The trees were, however, again secured to the wall, and the result has proved all that could be desired. Not a bud appears to have been injured; the trees have a clean and healthy appearance; not a vestige of the blight is to be perceived; and the fruit which they have borne this season has been finer than usual.—"Florist."

Keeping Apples.—The superb samples of Apples that Mr. Ford, of Leonardslee, so often exhibits in the month of March, at South Kensington, are the admiration of all who see them. They are not only fine examples of fruit, but are also shown in the finest state of preservation. No doubt soil and perfect ripening have much to do with the matter. The tissues of the fruit are well developed and fully matured, and thus there is a firmness and plumpness that is not always found in large fruit. Mr. Ford asserts that all his fruits are stored on shelves, in a large, airy, yet cool, Apple-house, and that they are never sorted over, or in any way handled until wanted for use; even any that may go rotten are not picked out specially. Whatever this let-alone practice may have to do with keeping fruit, no doubt his chief reliance is plenty of air and a regular cool temperature. Apples, like Potatoes, are much weakened by sweating, and although it is, to some extent unavoidable during dull, muggy weather, or on the break-up of frost, yet it is alleviated if plenty of air can be given, and the moisture soon dried up. Potatoes are almost as difficult to keep as late sorts of Apples, but even the earliest sorts will keep sound and plump a long time after the usual period for planting, if exposed on a dry shelf to plenty of air and a cool temperature. I have seen and eaten excellent samples that had been kept for more than a year, but, of course, these had not been exposed to the external air, but were wrapped in paper and laid on shelves, or kept in dry sawdust. The great point is to secure an equable temperature, as it is the fluctuations incidental to our seasons that so severely test the keeping qualities of both Potatoes and fruit.—A. D.

Extra Growth in Apple and Other Trees.—Those who were dissatisfied with the excessive rainfall last year will, I think, admit that the extra vigour of their hardy fruit trees has fully compensated them. In this locality the rainfall has had a marked effect on the growth of all trees. In the gardens here, some very old Apple trees, whose growth has been of a stinted character for years, appear now to have taken a new lease of life; some of their shoots are quite 3 ft. long, their usual growth being from ½ ft. to 1 ft.; the bright sunny weather which we have lately had, too, has ripened the wood wonderfully, which augurs well for next year's crop. Some trees of Ribston Pippin and Blenheim Orange, whose fruits usually come specked, and never keep, have this season borne a fair crop, of excellent quality, clean, and large; in fact, some of the Blenheim Oranges measure 14 in. round. The roots of these trees must be down in the subsoil, as they are growing in the kitchen garden, which, though trenched 2 ft. deep last year, not a trace of roots could be found. Whether or not they have been cut off by former trenchings, I cannot say. The great quantity of rain that fell last year must have washed the substance of the manure down to the roots in such abundance as to cause the extra growth in question. Apricots on walls appear to have been equally benefited, judging by the gross appearance of their growth, which is ripened and well set with buds. Fruit trees, however, are not the only ones that have been benefited by the excess of rainfall last year, for forest trees have also made extraordinary growth, which, I have no doubt, many will find by the increased quantity of leaves which they will have to clear away—a source of annoyance to some, but of benefit to many who, like ourselves, have to make manure of every scrap of vegetable refuse which they can find.—W. W., *Eaglehurst.*

IMPROVING WEAKLY FRUIT TREES.

Lord Bacon, in one of his admirable essays, wrote—"If you will have a tree bear more fruit than it hath used to do, it is not anything you can do to the boughs, but it is the stirring of the earth and putting new mould about its roots that must work it." Well-managed trees are always a redeeming feature, even when other matters in the garden furnish evidence of niggardliness or neglect. No doubt cold springs and other unfavourable climatal conditions exert at times a prejudicial influence, but well-managed trees, that have a sufficiency of healthy roots, are never permanently crippled, however much they may be temporarily checked by unfavourable weather. Keep the roots in a healthy, growing condition, and the branches, if properly cared for, will soon recover their natural vigour. There is no better way of keeping trees in health than by, as Lord Bacon says, putting new mould about their roots; and November is the best month in which to do such work. It often happens if a watchful eye be kept on the trees, and the first symptoms of failing health noted, that some new turfy mould placed about their roots brings them into a healthy fruit-bearing condition, instead of going from bad to worse until, ultimately, they have to be removed to the rubbish-heap. It is only another example of the truth of the old adage "A stitch in time saves nine," and not only so, but it saves a good deal of heart-burning besides, as it lowers a man not only in his own estimation but also in the estimation of others, to have his trees in bad health from causes that ought to be under control There are some places where new turfy mould is difficult to obtain but something might be done—some effort made—at least to shift the responsibility of failure—if failure there must be. A very large number of fruit trees die annually, or are removed incurable, that might have been restored to health if new turfy mould had been placed round their roots in time. But the work should be done carefully and, if possible, without unnecessary exposure. In carrying out the details of such work, one must be guided in some measure by the condition of the trees, the position which they occupy, and the quantity of new mould at command, but the more of the exhausted soil we can remove, supplying its place with fresh, the better will it be for the trees, and the longer will they live and bear good fruit. I need hardly say that all bruised, broken, or unhealthy roots should be pruned away. E. H.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Storing Apples and Pears.—I agree with "H." that Apples should be stored in sand to keep them from shrivelling, provided the sand be perfectly dry. This, indeed, is one of the best ways of keeping Apples all the year round. I have even known the French Crab to keep in sand for two years, and then appear quite plump and fresh. Pears may be kept in the same way Catilac, in particular, I have seen kept for twelve months in sand when the fruit was sound when stored, as one bad fruit will cause the sand to get damp and will destroy a great many.—W. W., *Eaglehurst.*

Autumn Strawberries.—I have no Héricart de Thury (or Garibaldi) Strawberries in my garden, but I have this day (Nov. 5) a small dish of ripe Strawberries on one plant. I send you a sample, and shall be glad to know the name, as the bed is made up of various sorts. Is it Souvenir de Kieff? As a proof of "the mildness of the season" you need not quote Devonshire or Cornwall, but refer to Boston, in Lincolnshire, five miles from the sea, on the east coast.—C. W. [Too much crushed in transit to be recognisable.]

The Best Bearing Apples.—Although this part of Hampshire is not a noted one for Apple culture, yet a great many sorts are grown hereabouts which are good croppers. Amongst dessert kinds I find the following to be about the best, viz., Summer Golden Pippin, King of the Pippins, Cox's Orange Pippin, Gooseberry Pippin, Golden Winter Pearmain, and Red Russet. The best kitchen sorts are, Manks Codlin, Winter Codlin, Blenheim Orange, Ecklinville, Hawthornden, Northern Greening, Profit, and one or two local sorts for which I cannot find names.—W. W., *Eaglehurst, Fawley.*

THE KITCHEN GARDEN.

DISEASE-PROOF POTATOES.

I ADMIT that this term is not a well chosen one, but granting its inappropriateness generally, something might be said for it in the strictly-limited and local sense in which I applied it. If I, or any other cultivator, in the course of experiments extending over a considerable number of years, find certain varieties to invariably give satisfactory results, one may be excused for looking upon them as disease-proof, although, as I have said, the term is not a good one, and I thank " A. D." for calling attention to it. I cannot, however, help thinking that the position which he has taken up as regards small Potatoes will ultimately become untenable, for no matter from what point of view we examine this question, whether we look at it in a broad national sense, as forming not only a great industry, but also an important food supply, or whether we take a narrow view, restricting the case to ourselves individually, the conclusions arrived at must be the same, viz.,that a crop of small Potatoes is in every sense a failure. Of course size, like everything else, is comparative; but if " A. D." occupied a position as gardener in a private establishment, or even if he sent his produce to market, if he had nothing larger than hens' eggs to show, the result would neither be pleasant nor profitable. The truth is, if we are to hold our own in competition with foreigners, we must in some way grow a fair crop of good-sized tubers—a crop, in fact, that will pay. I suppose all will agree that cold, heavy land is not so suitable for Potatoes as land of a lighter character; but it is possible in garden culture so far to modify our practice as to obtain a good crop on such land, even in bad seasons. Perhaps there is no better plan, at least I have not yet seen a better, than to throw the land now into 4-ft. ridges, rather steep, and in the spring round the crest of the ridge a little; draw drills along the top, 6 in. deep, and plant the Potatoes, covering them in a good depth. The rows will be 4 ft. apart, which will be none too much room for strong-growing late Potatoes. In June a row of late Broccoli could be planted in each furrow; and, when the Potatoes were lifted, a row of Lettuce or Spinach might be planted on the top of each ridge. Of course, the following year the Potatoes would be planted elsewhere, and this plot will come in for Celery, Turnips, or late Peas. Any one accustomed to watch the seasons, can generally tell, by the heavy oppressive atmosphere, and other indescribable symptoms, that the disease will break forth in a few days, and it is at the beginning of this period that the crop must be lifted if it is to be saved, or the less radical measure of cutting off or pulling up the tops may be adopted to gain time till the whole can be taken up. The term "manuring" ought to be amplified and extended; at present, with a good many people, it simply means digging in so much farmyard refuse mixed with decayed straw; but a moment's reflection ought to convince any one that a much wider signification should be given it, especially in dealing with Potatoes on heavy land. In the latter case phosphates, burnt earths, the bottoms of charcoal heaps, the gritty material that is obtained from the edges of roads, soot, lime—in short, anything that will supply what the crop requires in the way of stimulants, and strengthen and harden the growth at the same time. The whole art and mystery of manuring, I take it, is to obtain a clear perception of the deficiencies of the land, and the requirements of the crop, and, as far as possible, to supply what is lacking in the former that the latter needs. Manuring is too often a very haphazard proceeding. E. HOBDAY.

PREPARATION OF GROUND FOR RADISHES.

IT is absolutely necessary that some considerable pains should be taken to insure a free and moist root-run in well-enriched ground if Radishes are to be grown in perfection. It is often customary to sow them and other salading indiscriminately in any piece of ground which may happen to be in readiness or become vacant. This is, however, a mistake, as the soil, from being partly exhausted by a previous crop, and perhaps become somewhat lumpy and sour, is in a very unfit state for the reception of the seed. It would be much better if, at the close of the year, a spot of ground were selected and retained for this purpose alone during the ensuing summer. It could then receive careful preparation, and would always be in readiness. This latter point is not the least advantage which would accrue to the grower from an early preparation of the soil, as a break in the supply will sometimes occur through not being able to sow in time. Whilst the ground is being prepared the seed should be sown. The most suitable soil for the Radish is that which can at any time be easily and freely worked with the fork; a light and somewhat sandy soil, that has been well enriched with rotten manure, will best promote that free root-action which it is so necessary to secure, and without which tender and well-flavoured Radishes cannot be grown. If the soil should therefore be as above described, it will be easily sweetened and pulverised by well stirring it with a fork; it will then only be necessary to afford a liberal supply of nutriment during the growing season. This is best accomplished by working in a good portion of thoroughly-decomposed manure; that which has been used for hot-beds, and which has been turned over several times, is admirably suited for the purpose. Lacking this, short stable manure may be employed, removing the straw thoroughly, breaking all lumps, and working it in to at least the depth of 1 ft. Should the soil be of a stiff, tenacious character, add a good portion of leaf-mould, wood ashes, or any light material which may be obtainable; about this time of year it should be ridged up, and should remain in that condition during the winter. In February, manure should be added, and it should then be half trenched, burying the top 6 in., and bringing about the same quantity up in its place. This should be laid up as roughly as possible, in order that it may become thoroughly sweetened by the time when it is required for use. Manure may again be added at discretion. A good depth of free, well-prepared soil will thus be secured, and the extra pains bestowed on its preparation will not be regretted, especially if a hot summer ensue. In shallow or unsuitable soils, a few days' hot sun burns up the fibres, and watering is almost useless. This is mainly the cause why hard, dry, sticky Radishes are more the rule than the exception. Where a good deep root-run is provided, water may be given with beneficial effect, and a good soaking now and then will suffice to keep the plants growing without check. It is from the beginning of June onwards up to the end of August that the greatest difficulty is experienced. It is, however, comparatively easy to have good tender Radishes at any time, provided the requisite precautions have been taken to promote free root-action. Frequent sowing is, of course, indispensable, and this operation must be so conducted as to preclude the possibility of failure in germination. If the weather be hot and parching, the best way is to well water the ground at night, and early in the morning sow the seed thereon, which should have been previously soaked for twenty-four hours, and mixed with sand, to admit of its better distribution. Cover with some light soil, which should be firmly pressed down, and then lay some boughs or old Pea-sticks over the bed. Quick and free germination will thus be secured. If sown broadcast, 4-ft. beds are the most convenient size, as the plants can then be easily thinned and weeded; or they may be sown in drills about 9 in. apart. Of the two methods, sowing in beds is, however, rather the best, as the Radishes can there be more easily drawn when fit for use. JOHN CORNHILL.

Byfleet.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Over-grown Brussels Sprouts.—We have lately examined a sample of unusually large and seemingly very fine Brussels Sprouts, of which, however, about one in four proved decomposed inside. They were, therefore, although freshly-gathered, quite unfit for use. M. Vilmorin had good reason to remind us that the Belgians, who ought to know something of their own Sprouts, always prefer the very small Sprouts.

St. John's-day Drumhead Cabbage.—In the interesting trial of Cabbages at Chiswick, there is a very neat little kind of Drumhead grown under the above name, which Mr. Barron thinks very highly of. It was received from Messrs. Vilmorin, Andrieux, & Co., of Paris. No doubt somebody will take it up and re-christen it, giving it a new name as an English variety. This has already been the fate of several well-known Continental kinds.

Stott's Monarch Rhubarb.—He who has not tasted this Rhubarb has a treat to come, for without exception it is the most delicious as well as the finest Rhubarb grown. Its stalks and leaves are of size growth, and as a plant for covering large surfaces it will be found most useful.—W. H. CULLINGFORD, *Kensington.*

A Substitute for Potatoes.—A note going round the papers says that " a company has been formed for the importation and cultivation of the French Haricot Bean in this country; the promoters of the new Haricot Planting Company believe that the old prejudice against foreign vegetables has did out, and that the Haricot Bean will be gladly accepted as a welcome substitute for the Potato." This strikes the horticutiural reader as somewhat odd work for a company.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

NOVEMBER 6.

AMONGST the most attractive subjects shown on this occasion were groups of Orchids from Messrs. Veitch & Mr. Ollerhead; and a collection of cut flowers of hardy herbaceous plants from Mr. Parker.

First-class Certificates.—These were awarded as follows:—

Sarracenia chelsoni.—A beautiful bronze-leaved hybrid, of free-growing habit, the result of a cross between S. rubra and S. purpurea.

Primula capitata (Horticultural Society's Gardens).—An interesting Alpine plant, bearing trusses of bluish-purple blossoms.

Dicksonia Berteroana (Veitch).—A graceful-habited Tree Fern, perfectly distinct from any yet in commerce.

Melon Exquisite (Peyle).—A green-flesh variety, thin-skinned, and excellent in flavour.

Miscellaneous Subjects.—Amongst Messrs. Veitch's Orchids were good examples of the winter-flowering Calanthe, and a beautiful new hybrid, the result of a cross between C. Veitchi and C. vestita, the flowers of which are very brightly coloured, rendering it a valuable addition to winter-flowering Orchids. The same firm also showed some good Oncidiums and Indian Crocuses (Pleiones), and a garden variety of Adiantum cuneatum named Lawsoni, a kind with long slender fronds and remarkably light and elegant perianth. Good plants of A. speciosum and Vriesia brachystachys were also shown in good condition. Mr. Ollerhead furnished good flowers of Dendrobium formosum giganteum, flowering plants of Cattleya Dowiana, Miltonia Moreliana, and good examples of Calanthes. Mr. H. B. Smith, Ealing, contributed a group of well-grown Cyclamens, the flowers of which were unusually large and well-coloured. Mr. Parker showed Viola Sir W. Scott, a kind with large, well-formed flowers of a rich blue colour, surrounding a yellow centre; good blooms of Helleborus niger maximus, Michaelmas Daisies, Tritomas, and others. Good examples of Japanese Chrysanthemums in a cut state were contributed by Messrs. E. G. Henderson & Son, Pine-apple Place; and Mr. Davis, Park Nursery, Plumstead Common, sent finely incurved varieties of the same useful flower. Sir Trevor Lawrence furnished a remarkably good specimen of Oncidium crispum, and Mr. W. Smith, gardener to W. C. Lane, Esq., Henley-on-Thames, sent a finely-flowered plant of Vanda cœrulea. Mr. Cannell showed cut flowers of New Life Pelargonium in good condition, also an excellent collection of cut blooms of Zonal Pelargoniums, amongst which were some new kinds of decided merit; the best whites were Jean d'Arc and Fairest of the Fair, the latter having, however, a bright salmon centre. Of other kinds there were Heartsease, a rich scarlet suffused with purple, and Lizzie Brooks, a large-flowered sort, good in form and brilliant in colour. Mr. R. Dean exhibited a good potful of Godetia Lady Albemarle.

Fruit and Vegetables.—Examples of Mrs. Pince's Black Muscat Grapes were exhibited in good condition by Mr. Harrison Weir, who also showed Muscat Champion from a 20-ft. rod grown in a ground Vinery. Two bunches of Muscat of Alexandra were shown in excellent condition by Mr. Atkins, gardener to Colonel Lloyd-Lindsay, Wantage; each bunch weighed some 5 lb. or 6 lb., and the berries were large, even, and of a rich golden colour. Good examples of Golden Hamburgh came from Mr. J. Hudson, Gunnersbury, and Mr. Wildsmith sent Gros Colman in excellent condition. Pine-apples of good quality came from Mr. J. Dinsmore, gardener to F. Blackwell, Esq., Harrow Weald, and from J. Hudson, Esq. Mr. Tillery, Welbeck, contributed fine examples of the Salway Peach. Selected Brussels Sprouts came from Mr. Gilbert, Burghley, and good Autumn Giant Cauliflowers from Mr. Wilson, Clayton House. Collections of Potatoes were shown by Messrs. Hooper, on behalf of Messrs. Bliss & Sons, New York, and a large collection of fine tubers also came from Messrs. James Carter & Co., High Holborn. Of Turnips, a collection came from the Society's Gardens at Chiswick. Mr. Bennett contributed a punnet of Garibaldi Strawberries in good condition, considering the season.

From Mr. R. H. Hampson, Egerton Mills, Stockport, came an example of his Imperial Horticultural Shading, a cotton net-like material and very elastic.

Parisian Improvements.—That portion of the garden belonging to the Hotel de Luynes which has been cut into by the new Boulevard St. Germain, and in which some fine trees are growing, is to be preserved as a square, at the junction of that boulevard with the Rue du Bac.

Carpet Gardening.—It is probably a matter of taste, but we are inclined to think that geometrical and carpet gardening have been carried to an extreme. We should like to see a little more of the primeval in some of the gardens with which we are acquainted. We miss those quiet little nooks and shaded spots which speak of Nature, and Nature only—spots which do not immediately set one thinking out a problem of Euclid or remind one of the working of a "sampler." Very glorious and beautiful and charming are those circles, and arcs, and squares, and octagons—all formed of growing flowers in their loveliest tints; but they are all suggestive of work—planning, designing, and contriving—a never-ending round of labour.—"Figaro."

SCOTTISH ARBORICULTURAL SOCIETY.

THE twenty-fourth annual meeting of this Society was held in the class room of the Royal Botanic Garden, Edinburgh, on Tuesday last. The Right Hon. W. P. Adam of Blairadam, M.P., president, occupied the chair; and there was a numerous attendance of landed proprietors, nurserymen, practical foresters, and others interested in arboriculture.

The President opened the proceedings with an address, in which he referred to the gradual, steady, and sure progress which the society was making, not only in the number of its members, but in the influence and authority with which it spoke to all connected with arboriculture. He urged all landed proprietors interested in rearing woodlands, and all foresters engaged in that most interesting pursuit to become members of the society. One claim to the position in which he had been placed was, that he came of a race of planters and foresters. He was now the fifth in succession who had specially devoted himself to improving the estate of Blairadam, more by planting than by anything else. He had this advantage over many other races of landed proprietors who had devoted themselves zealously to this occupation, that the planting of Blairadam had become classical through a touch of the magic wand of that enchanter, Sir Walter Scott. Blairadam, in its original and unimproved state before the planting was begun, was a wild unsheltered moor, lying from 500 ft. to 700 ft. above the sea, with a certain amount of natural beauty, and with fine views of the plain of Kinross, Lochleven, and the Lomond Hills. But it must have been cold and bare; it was covered with Heather and coarse Grass, and had only one enclosure, and one tree—an Ash—which, though it still grew vigorously, was far out-topped by the younger generation. He knew of no instance in the improvement of waste land that more thoroughly illustrated the value and advantage of judicious, continuous, and persistent planting than the estate of Blairadam. Silver Fir had always flourished luxuriantly, and was the most remarkable species of tree on the estate. There were four still living, of which he had the girths in 1811, in 1851, in 1862, and in 1877. No. 1 was 8 ft. 4 in. in 1811, 13 ft. in 1851, 13 ft. 6 in. in 1862, and 13 ft. 9½ in. in 1877. No. 2 was 8 ft. 1 in. in 1811, 12 ft. 1 in in 1851, 13 ft. in 1862, and 13 ft. 3½ in. in 1877. No. 3 was 10 ft. 5 in. in 1811, 12 ft. 11 in. in 1851, 13 ft. in 1862, and the same in 1877. No. 4 was 9 ft. 2 in. in 1811, 11 ft. 5 in. in 1851, 12 ft. in 1862, and the same in 1877. These trees were planted about 1754, and others probably planted about the same time measured 15 ft. 3 in. in girth, 15 ft. 1 in., and 14 ft. 8 in. Five measured between 13 ft. and 14 ft., six or more between 12 ft. and 13 ft., and a great many others between 11 ft. and 12 ft. Three very remarkable Hemlock Spruces were planted about 1757. He did not give the exact girth, as two of them divided into separate limbs near the ground, but one had a girth before dividing of about 12 ft., and the other two of about 10 ft. He was afraid that these trees had almost ceased to grow, and that their gradual decay might now be looked for. He had dressed some of them with compost, but without producing any perceptible advantage. The right hon. gentlemen went on to refer to the necessity for something being done to establish a school for forestry in this country. It was the duty of the society to awake intelligent interest in this question, and he for one should be glad to do all that he could in and out of Parliament to further so praiseworthy an object. The necessity for good schools of forestry was illustrated by what was taking place in India. The wanton destruction of forests in that country had been going on for years. And who could say that the terrible famine which was now devastating some of the fairest provinces of that country, might not be directly traceable to the improvidence of man denuding the country of its natural vegetation, and so altering all the climatic arrangements of nature.

Mr. M'Gregor, Ladywell, gave in the report on the essays submitted for the usual prizes. A silver medal was granted to Mr. C. F. Amery, forest department, North-west Province of India, for Report on Indian Forests; silver medal to Mr. J. Hutton, Mackintosh Estates, Kingussie, for Report on Woods and Soils on which they Grow; bronze medal for Report on Use of Dynamite and Tonite in Forestry, by Mr. D. F. Mckenzie, Murthly Castle; silver medal for paper on The Movement of Fluids in Stems, considered in Relation to the Felling and Seasoning of Timber, by Professor W. R. M'Nab, College of Science, Dublin; gold medal for Collection of British Woods, by Mr. James Duff, Bayham Abbey, Tunbridge Wells; and silver medal for Rustic Work, by Mr. Jas. Scrimgour, Hopetoun House.

Mr. Robert Baxter, forester, Dalkeith Park, read a paper on "Woods for Making Different Kinds of Charcoal, and the Modes of Preparing it." Almost any kind of wood that grew in this country made, he said, very useful charcoal, with the exception of Poplar. Scotch Elm, Spanish Chestnut, and Lime tree he did not regard with much favour, owing to their peculiar bark offering great resistance to the charring process. Beech, Plane tree, Ash, Thorn, Oak, Hornbeam, Birch, Alder, and Laurel could all be employed as charcoal producers. The Yew and Holly made very superior charcoal, as they were very heavy, held well together, and had good lasting qualities as fuel. In conclusion, he entered into an elaborate description of the different processes for making the charcoal.

Mr. Malcolm Dunn read a paper on "Cryptogamic Plants Injurious to Forest Trees, and Their Remedies." He noticed at length instances of the attack of a fungus on the roots of Wellingtonia gigantea. The spawn of the fungus had completely choked up the sap wood, and thus killed the trees. The fungus had arisen from the decaying roots of old Elm trees which had been allowed to remain in the ground. The remedy for such attacks was the thorough preparation of the ground before planting, the removal of all dead or decaying wood likely to produce fungi, with careful attention to drainage, and timely and judicious prunings and thinnings.

THE LIBRARY.

FOOD: SOME ACCOUNT OF ITS SOURCES, CONSTITUENTS, AND USES.*

Although professedly forming one of the series of excellent guides which are being published by the Committee of Council on Education, for the use of students visiting the Art and Science collections at South Kensington and the Bethnal Green Museum, Prof. Church's little book may be read with both profit and pleasure by those who are prevented by circumstances from examining the objects of which it treats.

A large portion of the work is devoted to a description of the various vegetable substances constituting the food of mankind. The first vegetable product treated of is Starch in its different forms, a valuable warning being given that the various kinds of amylaceous foods sold under the names of arrow-root, sago, corn-flour, Maizena, &c., are not nourishing in the true sense of the word. Starch is simply a heat-giving food, and cannot produce much blood, muscle, nerve, or bone. Much misconception on this subject still exists in the minds of nurses and mothers who are often too prone to accept the statements put forward by certain advertising manufacturers of the edible starches. The late Dr. Lankester, who, as Coroner for Middlesex, had ample opportunities for observation, boldly affirmed that more than half the deaths of children under six months old, at any rate among the poorer classes, arose from their being fed with corn-flour and other varieties of starchy food. Sugar, from various sources, is next described. We should, however, have been glad to have heard a little more about the cultivation of the Beet in England as a sugar-yielding plant. Prof. Church simply tells us that it has been raised successfully in England on a small scale, but does not explain why the experiments were discontinued. Oils, fats, gums, cellulose, albumen, and caseine are next described, and, skipping an interesting chapter entitled "A Day's Rations," we come to Part ii., which contains nearly 80 pages of information about vegetable foods, beginning with cereals and ending with Nuts and the Dica Bread of the West Coast of Africa. The remarks of the author on the wholesomeness of salads are most excellent. He says that in order to be juicy and crisp, Lettuces, salads, and Cucumbers should never be gathered when they are wilted or drooping after a hot day. Many amateurs, and, indeed, professional gardeners, do not pay sufficient attention to this important point. We are also told that salads and Cucumbers should be cut and trimmed under water, so as not to expose the cut stem or leaf-stalks to the air. The plants will then, if left in the water, imbibe sufficient of that fluid to swell out their tissues to the desired state of crispness. The accounts given of the different kinds of fruit are good, and their dietetic value is dwelt on at great length. Amongst the poorer classes an immense deal of prejudice prevails against the use of raw fruit, on the ground of its unwholesomeness, and many a poor child whose system has been crying out for acids, has been cuffed for spending its farthing on green Apples. In the fourth part ("Food Adjuncts") we have descriptions of the various vegetable spices, condiments, herbs, and colouring and flavouring materials, Tea, Coffee, Cocoa, Tobacco, and Opium. The fifth and last part ("Of Food and Dietaries") will be found interesting to the general reader. The index is hardly sufficiently copious, but this defect is made up for by the systematic way in which Prof. Church has arranged the various subjects of which he has given us so interesting an account. C. W. Q.

WEATHER WARNING FOR WATCHERS.†

In spite of its somewhat affected title, and sensationally illustrated cover, this little book contains an immense amount of information on the science of meteorology, and the instruments used in its pursuit. The work is divided into six heads—calorification or heating, evaporation, rarefaction, condensation, motion, and electrification. Under the first heading we have an account and engravings of no less than twenty different kinds of thermometers, their construction and the way to use them. The chapter on the Barometer will no doubt be the most useful to the generality of our readers. The author seems to favour the use of the aneriod-barometer where extreme accuracy is not required. According to such enthusiasts as Admiral Fitzroy, Mr. Glaisher, Sir Leopold Mc Clintock, and others, the aneroid is quick in showing the variation of atmospheric pressure an appreciable time before the mercurial barometer shows any signs of the change. The aneroid ought therefore to be a more valuable instrument to the gardener than the more accurate, but less sensitive, mercurial instrument. Before recommending the use of that old-fashioned instrument, the storm glass, the author should have read Mr. Charles Tomlinson's researches on the subject, in which he proves that the changes taking place in the form and position of the floating crystals are due to differences of temperature, and not to variations in the height of the atmosphere. The Barometer Warnings are most useful, showing what kind of weather may be expected according as the fall in the mercury is shown as rapid during a high wind, or a calm, and so on. If such information as this were placed on the dial plates of our barometers instead of the words generally found there we should not be so frequently surprised to see the index pointing to "set fair" when it is promising rain, or *vice versa.* The explanatory card, complied by Admiral Fitzroy is also given, and should be hung up beside every barometer. The article on clouds contains a large amount of weather lore, which our readers would do well to make themselves acquainted with, a remark which applies with equal force to that on the winds, in which rules are given by which we may calculate with more approach to accuracy, the direction of the wind for two or three days to come by taking note of its previous variations and intensity. The relations between the direction of the wind, and the highest and lowest points of barometrical pressure, are very singular. For instance, let us suppose that in the case of the British Isles the barometer is lowest at Valentia, and highest at Yarmouth. In this case the direction of the wind would be from north to south, nearly at right angles to a line drawn between the two points; that is to say, an observer with his back to the wind will have the highest pressure at the spot on his right and the lowest on his left. We give the above as only one specimen out of many such interesting items of weather lore. The index is absurdly meagre, one hundred references to ninty-six pages crammed with facts is a very poor allowance. The letterpress and cuts are well and cleaely printed.

We have received an interesting account of the new plants introduced to European gardens during the past year, under the title of "Enumeration Methodique des Plantes Nouvelles ou Interessantes qui ont ete Signalees en 1876 par André de Vos." It is well done, and is an extract from the "Belgique Horticole." The author (unlike certain of his contemporaries in England) includes the plants figured in The Garden in his lists.

NOTES AND QUESTIONS—VARIOUS.

Jasminum Sambac.—Would "W. M." (see p. 377) kindly tell us how he manages this plant so successfully? I have grown it for half-a-dozen years, but have always found it a most unsatisfactory plant, owing to its dropping its blooms almost immediately they open. It flowers freely in a pot in the stove or greenhouse, but certainly best in the latter. As to its perfume, I cannot say a word in its favour.—T. Spelman, *Derry Castle.*

White Squill.—I observe in the last issue (see p. 418) a note from a correspondent in reference to what I called a white variety of Scilla sibirica, and, as I only saw it casually, it is just possible that the variety to which I referred may be a white variety of S. bifolia, and not of S. sibirica; should I happen to see it again, I will forward a piece of it, if possible, in order that this matter may be set right.—R. M.

Evergreen Hardy Ferns.—What is the best time for planting these in the open ground? and kindly furnish me with a few names of kinds such as will flourish in town gardens.—S. [Hardy evergreen, as well as hardy deciduous, Ferns may be planted at any time of the year, if the weather be not frosty, but if there be one time better than another, it is just before the new fronds rise (April for most hardy kinds). The following evergreen hardy British Ferns are all dissimilar, and fit for planting in suburban gardens, viz.:—

Aspenium Adiantum-nigrum
  Trichomanes
Ceterach officinarum
Lastrea dilatata
  spinulosa
  cristata
  Filix-mas paleacea
    cristata
    Bollandiæ
    crispa
Polypodium vulgare cambricum
    omnilacerum
    crenatum

Polystichum aculeatum
  angulare
    grandidens
    lineare
    proliferum Footi, or
    proliferum Woollastoni
    Elworthi or Wakleyanum
    cristatum
Scolopendrium vulgare
    crispum
    undulato-lobatum
    digitatum
    fissum
    laceratum

Evergreen thoroughly hardy Exotic Ferns.

Cyrtomium falcatum
Lastrea intermedia
  Goldieana
  marginalis
  Sieboldi
Lomaria chilensis

Lomaria alpina, or its var. major
Polystichum acrostichoides
  angulare Brauni
  vestitum proliferum
  setosum
  munitum

Mr. W. Stevens informs us that it is Mr. Knowldin, of Trentham Gardens—not Mr. Legg—who has been appointed to Carton.

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* "Food: some Account of its Sources, Constituents, and Uses." By A. H. Church, M.A., Oxon, Professor of Chemistry in the Agricultural College, Cirencester. London: Chapman & Hall. 1876.

† "Weather Warning for Watchers." By "the Clerk" himself: London, Houlston & Sons, 1877.

No. 313.] SATURDAY, NOVEMBER 17, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

A FEW WORDS ON HARVEST DECORATIONS.

We live under the shadow of a church truly worthy of our old historic town. It is a building of the fourteenth century, though parts of it belong to a much earlier date. It is in fine preservation, and was restored some twenty years ago by Sir G. Scott. As a work of art it is nearly perfect; it has been the glory and pride of thousands, and will be, no doubt, in ages yet to come, a delight to all who can value a "thing of beauty." We are in the habit of decorating our church at Easter and Christmas, as well as at the annual harvest festival; but this year, when this feast was fixed for October 11, some of the wiseacres in the parish shook their heads. "There will not be a flower in the gardens; the frost will have caught the Dahlias; there are no berries this year, and the Corn is black." In spite, however, of these prophecies, and others quite as depressing, our old church never looked more lovely than it did on this particular day. Flowers and Corn were abundant, and they were arranged with the greatest taste. The gas standards (they are very artistic, being some of Skidmore's best work) were gracefully wreathed with Oats, Wheat, and Barley, having sprays of Ivy and bunches of berries tied in at intervals. The desk was adorned with a fringe of Oats and Barberries, these last looking like spikes of coral; and small bunches of Grapes and leaves were added. Below, on the ground, the desk seemed to stand on a small bank of Moss planted with Ferns and flowers. Dahlias, Roses, Tritomas, Chrysanthemums, scarlet and white Pelargoniums, almost appeared to be growing. The pulpit, of carved Oak, also stood in a bed of Moss, into which were sunk pots of Fuchsias, red Pelargoniums, and Ferns. The supports of the pulpit were wreathed with Ivy; above these hung a fringe of Oats 1 ft. deep. The pulpit itself is divided into five compartments; into each of these was inserted a slender framework of wood, which was covered with Oats, and a large bunch of Grapes ornamented the middle panel. The Oak screen is an excellent preservation, and particularly deserves to be noticed. Above it stood a large cross covered with red and ornamented with Ivy; a thick wreath of Barley hung upon it, and on each side were sheaves, one of Wheat, the other of Barley. Depending from the arch of the chancel door was a deep fringe of Oats, like the one which was upon the pulpit. The screen belongs to the rectilinear or perpendicular period in architecture, and its graceful open arches were wreathed with ears of Barley and red Berries, and fringed with Oats. The space at the base of the arches was filled with plants in pots, such as Dracænas, Fuchsias, Pelargoniums, and Palms; these appeared to be planted in Moss, while sprays of Ivy were trained over the lower part of the screen. The tall gas standards on each side of the altar were decorated with Corn, Ivy, and Dahlias, the rails being wreathed with Corn and Dahlias. The reredos is divided into three compartments, the one in the middle being the highest. "Giving thanks always" (the letters formed of Corn on a blue ground) was the appropriate text for the middle division. The two sides bore the word "Alleluia." These inscriptions were placed on the top. The middle compartment was filled in with gold paper, with traceries of leaves. Each side compartment contained six panels, three above and three below; these were likewise filled in with gold, and upon this was a design in light blue paper. This design was traced in Berberis leaves, now turning red; in the centre of each design was a cross, or a double triangle, or a medallion of flowers. The crosses were particularly beautiful; they were made of yellow and purple Dahlias, but the background was composed of leaves of purple Beet. These looked like thick velvet, and had a very fine effect. The triangles were of Corn and the berries of the Mountain Ash. The flowers used for the medallions were Gladioli, Pelargoniums of different colours, and Roses mixed with Ferns. The stately spikes of the Tritoma looked very well when planted in Moss. This is the very flower for autumn decorations on a large scale, and I always wonder that it is not more generally used. On the altar were three vases of flowers beautifully arranged, the middle one entirely white, the side ones white and scarlet. The background for the flowers was formed of large Ferns. Besides the vases of flowers two antique chalices were filled with Grapes, and the sprays of the Vine tendrils looked very graceful hanging from the bunches. I must not forget to mention that small bunches of Grapes were placed in the middle of the triangles.

I would here strongly advocate the use of natural in preference to conventional modes of decoration in our churches and chapels; most of us are tired of the eternal double triangles, monograms, and other symbols, and would fain exchange them for flowers artistically and yet naturally grouped. The most effective of our devices on the reredos were the medallions of flowers on the lower compartments; they looked as if they were growing; their stalks had been carefully wrapped in wet Moss, and this kept them fresh for days. The rich orange blooms of the Gladioli, contrasted with purple and white Asters and supported by Ferns, looked particularly well, as did also a similar design of pink and white Pelargoniums. The employment of the red and golden leaves of the Vine, the Virginian Creeper, and those of the Berberis (which are just now very beautiful), may be particularly recommended; the rich brown and red leaves of the latter showed well on the blue ground. The leaves of the Ribes sanguineum are also very effective; I have seen them of many different shades of grey and brown, all very lovely. This sober splendour of the fading year, beautiful in its decline, chimes in well with our own thoughts at this time; far otherwise is it with us in spring,

In whose coat armour richly are displayed
All sorts of flowers, the which on earth do spring
In goodly colours gloriously arrayed.

Then everything is fresh and bright. The natural world, awakening from its winter's sleep, hastens to put on a livery of green; but in autumn, when the dark, dull days are approaching, our feelings assume a tinge of sadness. The youth and the prime of the year are gone, and we thankfully accept and cherish all that is left of summer's lavish gifts.

Such is a short account of our harvest decorations. I did not see them on the day of the festival, but, going into the church the next afternoon, I was quite struck with the alteration which brilliant colour lends to a building whose only fault is a certain coldness; it was like giving to a marble statue the hues and the warmth of life. It had been a dull autumnal day, "The rocking winds were piping loud,"

The yellow leaves
Hung on those boughs which shook against the cold.

But, once inside the church, all was changed; a few late gleams of sunlight struggled in and fell on the painted windows—"Rich with many a prophet and many a saint."—and brought out into fine relief the exquisite carving which the hand of time had touched but to adorn. The floral decorations added grace and colour to what was already so beautiful. The rich Oak screen, with Corn and "Ivy canopied and interwove," the fair form of the grand church, gloriously arrayed in her festal robe of flowers; this was a vision of delight which I shall not soon forget.

Every year ought to witness some progress in this matter of church decoration. It is not long since the only thing done in that way here was managed by the clerk, who stuck a few of what he called "boughs" into holes drilled on purpose in the high-backed pews, carefully arranged, as old Weaver describes them, "high and easie for the parishioners to sit or sleepe in." I remember the first time that an attempt was made to have something more artistic in the way of Christmas decoration in our parish. Wreaths of Holly and Ivy were made, and put up with some little regard to what was the beautiful; the boughs were to vanish, as the high-backed pews had done some few years before. "The old order" was to change, "yielding place to new." Persons of taste hailed these changes; they did not, however, give universal satisfaction. I happened to come across our parish clerk on Christmas eve, just as the decorators were putting the last touches to their work. He was wandering about in a desultory manner, contemplating in mournful silence the changes which were taking place. "Well, Verges," I remarked, "this is an improvement on our old doings. What is your opinion? I never saw the church look so well before." I could hardly have said anything more *mal apropos*. He turned round and replied sternly, "Well, sir, I was satisfied with things as they was; as for these ere wreaths and such like, taking of 'em altogether, I consider 'em as nowt but hinnovations." W. N.

THE FLOWER GARDEN.

LARGE-FLOWERED CHRISTMAS ROSE.

(HELLEBOROUS NIGER MAXIMUS.)

This, in addition to being larger and finer than the ordinary Christmas Rose, is certainly an earlier bloomer, and for those who value cut flowers, or flowering-plants in pots, during winter, and who have but a limited amount of heated glass structures, I do not know of a more valuable plant than this is; it only needs the protection of a glass covering to keep its blossoms from being dashed by heavy rains, and it will be in full flower during the dullest and darkest days of the year. Last season I procured half-a-dozen clumps of this variety, and planted them on a well-prepared border, in two rows, in such a way that an ordinary two-light frame would cover them. They have already produced blooms in abundance; there are large quantities of buds yet to open for succession; and, owing to the favourable weather which we have had, no protection has as yet been required. They are admirably adapted for furnishing vases, as, if cut in the bud state, they readily expand in water, and last as long as any flower with which I am acquainted. I would recommend any one beginning to grow this useful plant to give the soil a good preparation, choosing an open, sunny aspect for it, where the crowns can be well ripened, and every season the plants will produce great quantities of flower. If well trenched and manured they would not require re-planting for at least seven years; but a top-dressing of well-decayed manure, and a little liquid manure, might be given during the growing season when the plants are making their foliage, as upon the size and substance of the leaves will depend the size of the flowers. If required for pot culture, care should be taken to protect the foliage from injury; when the blooming season is over, they should be protected by a frame until genial weather permits them to be plunged in the open air. Hardy subjects like the Christmas Rose frequently suffer when removed from under glass, for although hardy enough to withstand our severest winters when continuously exposed, their growth, made under more exciting circumstances, will not withstand any sudden variations of temperature. For this reason it is advisable to keep them in as cool a position as possible when in flower, so that the growth of young foliage may not be excited before its natural season. James Groom.

Henham.

Violets.—This has been a favourable season for Violets, many of which are now flowering freely in the open ground, and promise, weather permitting, to do so all through the winter. A fairly moist summer, and a cool autumn have kept the plants well in leaf, and have induced the early formation of blooming crowns. The earliest single kind, and at the same time the finest and most valuable, is Lee's Victoria Regina, a variety that ought to be grown in every garden, and would be, did people fully understand what a grand Violet it is. The earliest and best double kind, undoubtedly, is Marie Louise; it is a greatly-improved Neapolitan, earlier, hardier, and has flowers of a rather deeper hue of colour. Both of these kinds will furnish an abundance of flowers during open weather through the winter, but it would be well to lift a number of strong plants and put them into a large two-light frame, keeping them close to the glass. Thus treated, and with a slight amount of protection in bad weather, flowers could always be had. If plants be lifted for this purpose now, the side-shoots and runners should be taken off them, and they should be pricked out thickly in a bed for the winter. By the middle of April these will all be well rooted, and can be re-planted in beds from 9 in. to 12 in. apart, where they will develop into strong blooming plants by the ensuing winter. There are few hardy plants more easily cultivated than the Violet, and few better repay any extra care that may be bestowed upon them. On the other hand, however, if there be out-of-the-way spots where other useful plants cannot be got to grow, it is very probable that Violets will do fairly well, always furnishing a good covering of leaves, and in due season a fair sprinkling of flowers, although not so fine as those produced by younger plants.—A. D.

Phlox Drummondi grandiflora.—Nothing can exceed the beauty and usefulness of this Phlox, either as a border plant or for bedding purposes, and it is also invaluable for furnishing cut flowers. Its colours, which are varied and brilliant, are far superior to those of the older varieties, and they are not injured by bad weather or frost like those of many other flowers. Here, on the mornings of the 17th, 18th, and 19th ult., when the thermometer stood at 30°, 26°, and 28°, and when there was ice one-sixteenth of an inch in thickness, this Phlox was not injured in the least, although many other flowers near it were completely destroyed. Since then I have cut an abundance of flowers, and the plants are still (Nov. 10) in good bloom, which consists of twelve or more distinct colours. Although this Phlox is generally treated as an annual, it strikes freely from cuttings at this season; these come in usefully for pot culture and early spring bloom in the conservatory or greenhouse.—W. D., *Wierton.*

Bedding Violas in Autumn.—The great importance for bedding purposes, of the many and ever-increasing varieties of Violas, particularly in the cool soils and comparatively damp atmosphere of Scotland and the north of England, as well as many parts of Ireland, is now so generally acknowledged that it is unnecessary to take up space by enlarging upon it. These gems of the flower-garden have been, during the autumn months, unusually fine in the neighbourhood of Edinburgh. On visiting the nurseries of Messrs. Dicksons & Co., about the end of October, I was struck with the beauty of two long borders planted with the following sorts in rows, which were covered with bloom, and quite as gay as one could wish to see them in the spring and summer months. There were many others more or less known and appreciated by cultivators, but the following seemed to commend themselves specially for their late-blooming qualities, viz.:—Alpha, deep bluish-purple, with a dwarf and branching habit of growth; Canary, golden-yellow, prominently pencilled; Grievii, bright yellow, singularly effective; Sovereign, rich yellow, habit dwarf and branching; Stricta aurea, flowers small, clear yellow, but wonderfully plentiful; Stricta alba, waxy white; Lilacina, flowers large, rich lilac, habit dwarf and branching; Multiflora, lavender, centre purple, with golden eye.—H. F.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Unlifted Dahlias.—We never take up Dahlias in winter. When cut down by frost, they are covered with coal ashes, and in April they are taken up and planted on a hot-bed with no glass over it. When the shoots are about 6 in. high, the roots are divided, and only one shoot planted in each place, prepared for it by being dug, two shovelfuls of manure being added to the soil for each Dahlia. Dahlias thus managed have been particularly good this year.—C. M O.

Effective Flower Beds.—Coleus Verschaffelti and Alyssum variegatum may be planted in innumerable ways with the best results. Two round beds here, 12 ft. across, were planted with them as follows:—The centre (3 ft. wide) consisted of Alyssum, then a band 3 ft. wide of Coleus with eight star points, each point extending to the edge; the remainder was filled in with Alyssum. These have been very effective, and to my mind such simple patterns are more pleasing than the many complicated designs now introduced into carpet flower bedding—design being apparently of more importance than the flowers themselves.—W. W., *Eaglehurst.*

Salvia Bruanti.—I do not know the Salvia mentioned in your Notes of the Week (see p. 416), but I have little doubt that the unnamed bicoloured species mentioned with it is the old S. tricolor, the flowers of which are white and carmine, occasionally varied with another streak of red, and then a true tricolour. It is a beautiful little plant, which I rejoiced last year to recover. —H. H. Crewe.

Crimson China Rose.—This, planted in front of shrubbery borders or herbaceous beds, and kept pegged low, is invaluable at this time for cutting. We have only a small line of it, but we get a handful of Roses from it every other morning. The blooms, though not large, are brilliant in colour. It requires little attention after being started.—A. H., *Thoresby.*

Tropæolum tuberosum, described in The Garden, October 27 (see p. 399), is very effective in autumn, when planted so as to climb through spring-flowering and other shrubs, such as Pyrus japonica, Ribes, &c., if in a sunny position. If planted rather thickly, near the edge of a clump of Rhododendrons, it looks like a bank of orange and red flowers, till they are cut down by frost. This Tropæolum is quite hardy here; the tubers are taken up, divided, and replanted in spring, and require no further trouble.—C. M. O., *Dublin.*

NOTES OF THE WEEK.

"The Garden."—This week we publish our 100th coloured plate, without reckoning the Xanthoceras, Lily, and other plates which were published before the regular issue in January, 1876. Since then we have not once failed to issue a coloured illustration. This was more than some of our best friends hoped for us. The general reader may understand the difficulties in the way of producing good coloured illustrations when it is stated that, apart from the original water colour drawing, and the subsequent drawing on stone necessary to print each colour, the plates in their production have to undergo from eight to thirteen separate printings. Of late we have not used less than 6000 per week—sometimes considerably over that number.

Gilbert's New Double Primulas.—Of these we have received specimens which fully bear out all that Mr. Hobday said last week (see p. 441) in their favour. The flowers, which are white, rose, or pink, are of good form, and, being double, they possess the merit of lasting long in perfection in a cut state. For conservatory decoration, during the winter months, these Primulas will be found most valuable.—S.

Iris alata.—This lovely Iris, sometimes called I. scorpioides, is now in bloom in the Hale Farm Nursery, Tottenham. Although hardy in some places, it will be found to succeed best in a cold frame along with Narcissus Clusii, Leucojum autumnale, and similar plants, blooming beautifully at this time of the year. If grown out of doors, the blooms should be protected by a hand-glass.

Melianthus major in Ireland.—This plant, usually grown for the beauty of its foliage, is just now in flower here in the open border. It receives no sort of protection even in winter, and it could not be more vigorous than it is. Few seem to know its hardiness, and that treated thus it forms a far more beautiful bush than in a greenhouse, where it is apt to get too much drawn up.—F. A. Nicholson, *Meath.*

A New Eranthemum.—As indoor winter-flowering plants, the Eranthemums are well known, E. pulchellum being usually grown in every garden on account of its bright blue flowers, which are so attractive at this season of the year when associated with Chrysanthemums, scarlet Salvias, and other conservatory plants. It is therefore satisfactory to find that a valuable addition to the genus has just been made by Messrs. Veitch. In habit it is branching and compact, and the leaves, being smooth, are easily kept clear of insects. Its flowers are rich violet-purple in colour, large, and well formed, and are produced in great abundance. It is named E. laxiflorum.

Cypripedium Sedeni.—Amongst the numerous Lady's Slippers which have been raised of late years, probably few are more useful or attractive than this. It grows freely, and has long leaves of a deep green colour. Its flowers are produced in great numbers upon branching spikes, which continue to grow and flower for months in succession. Where cut flowers are needed, this Cypripedium might be profitably grown for that purpose, for, in addition to a long succession of bloom, the flowers last for several weeks in perfection if their stalks be inserted in wet sand. We lately saw a specimen of it, in one of the London nurseries, bearing nearly twenty spikes of flower.

Imported Pine-apples.—Importations of St. Michaels Pine-apples to the London markets during this autumn have been very small indeed, and English-grown Queens have fetched unusually high prices. This week, however, heavy consignments of Smooth Cayennes have been received; they have arrived in excellent condition, and many of them weigh from 6 lb. to 7 lb. each, and in flavour are by many pronounced to be quite equal, if not superior, to that of home-grown fruits. They may be bought at much cheaper rates than English growers could possibly produce them.

Pelargoniums for Winter Decoration.—Few plants are capable of furnishing such a diversity of colour as the Zonal and Nosegay sections of Pelargonium, and, in addition to their attractions during the summer and autumn months, under good management, a fine display may be made with them all through the winter. Mr. Cannell has, at the present time, hundreds of plants bearing flowers from 2 in. to 2½ in. across, the petals of which are of the richest shades of colour, and, the different kinds being judiciously mixed, a striking display is the result. For flowering, in autumn young plants are started early in spring, and grown on for that purpose; for winter flowering, older plants are used; these are cut back in autumn, after their wood has become well ripened, and when subjected to a little heat and abundance of air and light, they throw up a succession of brilliant flowers all through the winter and spring months. Such plants would render the conservatory or greenhouse much more attractive than it ever could be made by the plants which are usually found in such structures. In the nursery in question we noted plants of Pelargonium Dr. Denny yielding large trusses of rich orange-crimson-eyed bright purple flowers.

White Lapageria.—The flowers of this beautiful greenhouse climber, being much prized by London bouquet makers, florists are planting it largely with a view to meet the demand. Though hitherto scarce, it will be seen by our advertisement columns this week that considerable quantities of it, as well as of the red kind, are to be sold by auction at various places.

Remarkable Growth in Cycas revoluta.—A large specimen of this ornamental plant, in Mr. Ley's conservatory, at Croydon, a short time ago produced over seventy large handsome leaves at one time.

American Apples.—Good specimens of Newtown Pippins, the best of all American dessert Apples, may now be bought in Covent Garden Market. It is a remarkable fact that, whilst good fruits of the best English dessert Apples can be bought for 2d. and 3d. each, Newtown Pippins realise 4d. American Lady Apples, too, are now abundant, and are equally valued for their bright appearance and good flavour.

Cyclamens and Primulas.—The thousands of Cyclamens and Primulas which the Messrs. Sutton & Sons grow for seed at their London Road Nurseries, Reading, are now in great beauty, and worth inspection by all, and especially by lovers of these classes of plants. Visitors to their Root show, which takes place on the 24th inst., should also make a point of visiting the Nursery.—W. W. H.

Cattleyas in Flower at Chelsea.—Cattleya Dowiana, of which a coloured illustration was given in The Garden last week (see p. 448), is now finely in bloom in Messrs. Veitch's Nursery, in the King's Road. Like most kinds of Cattleyas, the flowers of this vary considerably both in colour and form; one may, therefore, reasonably hope that, when it comes to be crossed with other species, some valuable hybrid varieties may be obtained from it. In the same house, C. exoniensis is beautifully in flower; it is the result of a cross between Lælia purpurata and the Syon House variety of C. Mossiæ, and is, without doubt, one of the best hybrid Cattleyas in cultivation. It has a well-defined, rich purple lip, and golden-yellow throat, its large, exquisitely-formed petals being of a handsome, transparent, violet-pink colour. C. labiata, C. Dominiana, and C. Fausta are also in good condition.—C. S.

Vesuvius Pelargonium Sports.—This Pelargonium is universally acknowledged to be the most useful scarlet-flowered kind in cultivation, either for border or pot culture, and, in consequence of its remarkable propensity to sport, we may yet be indebted to it for many new and entirely distinct kinds. In Mr. Cannell's nursery at Swanley we had, the other day, an opportunity of seeing several sports obtained from Vesuvius. One, a nearly pure white, is as yet unnamed; another is the scarlet semi-double sort called Wonderful, the flowers of which are so valuable at this season of the year for cutting, on account of their lasting properties. New Life, a scarlet and white and salmon striped flower, is also a sport from Vesuvius; and another we noted was coral-coloured, marbled with salmon. All these sports possess the same habit and free-blooming qualities as the parent, and will, on that account, doubtless be largely grown. —S.

Flowers in Covent Garden.—Whilst in gardens November is usually looked upon as a comparatively flowerless month, it is far from being so in Covent Garden Market, for just now the shops in the Central Avenue are as gay as they possibly can be with bouquets of the choicest kind. White Lilac from France has made its appearance, and Roman Hyacinths are not only plentiful in a cut state, but are freely employed for furnishing edgings for wicker-work baskets containing Primulas, Solanums, and other attractive plants in pots. Camellias, Tuberoses, and Eucharis amazonica, together with choice buds of the Niphetos and Isabella Sprunt Roses, occupy a foremost place among the choicest light flowers. The white blooms of the graceful Japanese Chrysanthemums are now favourably thought of, and are being used extensively in floral arrangements; flowers of Orchids, Carnations, and Bouvardias, too, are plentiful, and the useful blue Cornflower (which has been coming to market all through the summer), Stokesia cyanea, and Neapolitan Violets, are the best blue flowers for bouquets.

Large Brussels Sprouts.—The aim of some growers of this vegetable seems to be to produce the Sprouts as large as possible; but large Sprouts do not seem to be appreciated in Covent Garden Market, for whilst large loose examples are being sold there at cheap rates, much higher prices are asked for firm young Sprouts about the size of Walnuts. Good Brussels Sprouts should be of such a size as to admit of their being cooked and eaten whole; but if they are half stalk, and have to be cut up like Cabbages, they are comparatively worthless.

VENICE AND ITS GARDENS.

Having recently visited Venice, after an absence of eleven years, I am glad to report favourably on the great improvement everywhere observable in the cultivation of plants in and around that city. The departure of the Austrians, and, consequently, the large increase of Italian residents and visitors to this most attractive of cities, may be the chief cause, but doubtless the taste and beauty displayed in the many superb gardens or villas about the Italian lakes have contributed to the increased love of gardening in Northern Italy. Many of the open places are now ornamented with rich clumps of Conifers and evergreen shrubs; of the former, there are fine specimens of Deodars, Cypresses, Junipers, Retinosporas, and Yews, which combine well with tall Neriums, Euonymus, and Pomegranates, many good bedding plants filling up the interstices of the margin. On entering the Botanic Garden I found that it was no longer a Government establishment, but had become a thriving nursery ground. Among the Conifers I noticed tall Cypresses, Roman Pines, Taxodiums, Piceas, and varieties of Cupressus Lawsoniana, &c. My old friends the male and female Gingko trees (Salisburia adiantifolia), which formerly flanked the entrance gates, have now become large specimens, assuming a rotund form; but probably their situation, open to the winter winds from the Julian snow-capped Alps, has prevented their growing tall and pyramidal, their normal type in England and other countries. It was from the female tree that I brought to England, some thirty years ago, the ripened fruit, the first that ever arrived; this season (October) the seeds were not matured enough to be of any use. There is also a large collection of succulent plants of all climes—Aloes and Agaves, Cacti in great variety, Mesembryanthemums, &c., which attain a vigorous growth in this sunny region. A very striking group of grand Cypresses is in the garden of the Seminario, attached to the Church of the Salute, and also Orange and Lemon trees, Pomegranates, species of Chamærops, Date and other Palms, Dracænas, and Yuccas, which are often seen together with Pinus Pinea, towering above the red crumbling walls of the garden. The Ciotat, or Parsley Vine, I first saw in Venice; it is still met with, and other Vines rambling over the walls and trellises, but the Grapes are not good in Venice. At the time I left large boats were arriving at the markets filled with huge baskets of dark Grapes piled up in pyramids and secured by open netting; these came from the islands and mainland. Peaches and Figs were brought in the same manner, but the season for these is now over. The Zucchi, or huge Gourds, some long-shaped and others smooth, and of a flattened form or grooved, present a rich and glowing mass of colour, especially when cleft open to invite the purchaser; these, spread on the riva or piled up in the boats at the great vegetable markets, close to the Rialto and the earliest church in Venice—San Giacomo—present one of the most striking scenes in Bella Venezia. I regret that I could not, on this occasion, visit the Botanic Garden at Padova (said to be the earliest established in Italy), but I hear that it is not so well kept up as it deserves. E. W. C.

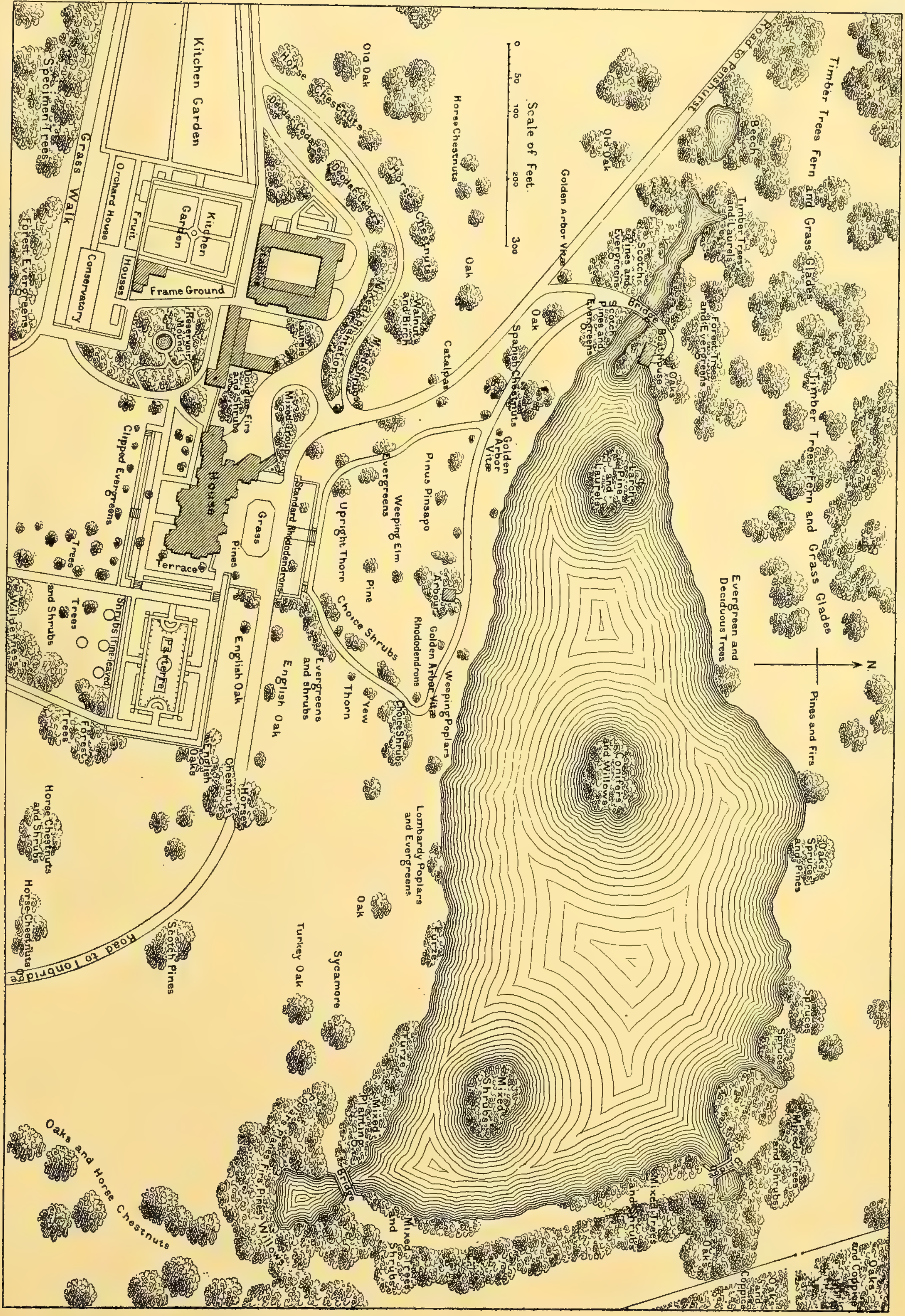
Glen Andred.

East Lothian Stock.—This is one of the very best hardy flowering plants which we possess. It has many good qualities to recommend it, being pretty in colour, sweet-scented, and of easy culture. When cut it will last eight or ten days, provided the water is changed occasionally. A good bed of it is most useful where cut flowers are in request. We have a row of it on each side of a central walk in the kitchen garden, consisting of about 300 plants, all of which are, at the present time, one mass of bloom, and they have been in that condition since July, notwithstanding that baskets of flowers have been cut from them for decorative purposes. The seed was sown in boxes in February and put into heat; when the seedlings were well up they were removed to a warm, light pit, and gradually hardened off until May, when they were planted out about 15 in. apart, alternate plants being of different colours, consisting of scarlet, white, and purple. They soon established themselves, and grew rapidly until July, when they met in the rows, and began to bloom profusely, with scarcely a percentage of single ones among them. They now look like a dwarf hedge, 18 in. high and as much across, and, as has just been stated, they are a blaze of flowers, and have the appearance of continuing in blossom till Christmas, should the weather keep open.—W. W., *Eaglehurst.*

Juniperus Sabina.—The most perfect specimen of this shrub that has come under my notice, is to be seen growing on the lawn at the Rectory here. Its height is 5 ft., and its circumference 72 ft.—Richard Nisbet, *Aswarby Park, Folkingham.*

HALL PLACE, TONBRIDGE.

This, the residence of Mr. Samuel Morley, is a new building in the Elizabethan style, erected in a situation for which Nature has done much; and Art, too, has materially helped to enhance the many fine landscape effects which present themselves within the domain. A glance at the annexed plan, with its various tree and shrub masses and other objects of interest carefully shown, will give a good idea of the general appearance of the grounds. An effective feature is the lake, which has been introduced into a valley on the north side of the house. At the west end of the lake is a boathouse and rustic bridge, associated with a picturesque old Spanish Chestnut and other trees and shrubs, and in the foreground is a handsome specimen of Picea Pinsapo. Westward from the house is the carriage-drive, leading to Penshurst. It passes by two or three fine groups of trees, and ultimately leads up to the lodge-gate, through a straight avenue of young Horse Chestnuts, which will doubtless furnish a noble feature in years to come. The chief entrance to the domain is, however, on the road leading from Tonbridge, and in the drive therefrom occur some fine park scenes, through which, at certain points, excellent views may be obtained of the mansion. A large parterre forms a good foreground on the east terrace, the mid-distance consisting of groups of timber trees, and beyond come into view the hills in the neighbourhood of Sevenoaks, Knowles, and Tonbridge. In the parterre, which is overlooked from the drawing-room, mop-headed Acacias, Standard Portugal Laurels, Pyramidal variegated Golden Hollies, Golden Arbor-vitæ, &c., are very effectively used. From the south terrace, glimpses may be obtained of the hills about Redleaf, Bidborough, and Penshurst, the square-towered church, half hid amongst Lombardy Poplars, Oaks, and Beeches, being especially noticeable. The reservoir mound is planted with Elms, Thorns, Scotch Firs, Cupressus macrocarpa, Double Furze, and many other trees and shrubs; within it is a large reservoir for water in two divisions, one within the other, containing collectively upwards of 20,700 gallons, for the use of the house, and for distribution over the gardens and pleasure grounds by means of hydrants placed wherever needed. The water is obtained from a well in the valley, and forced up from thence into the reservoir, an elevation of 30 ft., by means of a turbine wheel. On the large tower of the mansion there is also a tank which contains 20,703 gallons, and in other positions a fire tank holding 4,875 gallons, and tanks for the reception of 30,000 gallons of rain water. On the walk running westward to the Rose garden, and parallel with the sunk fence and balustrated low wall dividing the dressed grounds from the park, are obtained many attractive views, one of which is a full sight of the south side of the mansion, to which the eye is particularly attracted by the rich and abundant display of hardy climbers and shrubs, suitable for wall decoration, with which it is clad Here are also numbers of fine Conifers, consisting of Picea cephalonica, Pinus insignis, Wellingtonia gigantea, an excellent Taxodium sempervirens, Deodars, Menzies' Spruce, Pinus excelsa, and Araucaria imbricata. From this part of the grounds may also be seen many picturesque old trees of fine growth, and, after passing the Rose garden, which is furnished with some of the best varieties in cultivation, the walk terminates at a picturesque old lodge and an arched gateway, now disused. A portion of the south lawn is occupied by fine-foliaged and other ornamental trees and shrubs, such as Abies Douglasi, Thuja Lobbi, cut-leaved Weeping Birch, Weeping Arbor-vitæ, Paulownia imperialis, Magnolia grandiflora, Pampas Grass, and also three circular beds containing Polygonum Sieboldi, Aralia Sieboldi, and similar plants. Within a portion of the outer boundary, consisting of a large grove, are effectively-planted masses of hardy Ferns and other plants, so as to constitute a wild garden or wilderness. In many of the houses the old Vines have been entirely uprooted and replanted, after the border had been drained, concreted, and replenished with a suitable compost, and, although this is their first season after the severe ordeal through which they have passed, they have borne a good crop, showing no symptoms of shanking, to which in former years they were liable. Amongst new Grapes, Golden Queen is very highly spoken of as regards quality, and also as a late keeper. G. T.



GARDEN IN KENT, BY MR. MARNOCK.

THE INDOOR GARDEN.

VERBENAS IN POTS.

It may be thought by some that it is a mere waste of time and energy to grow Verbenas in pots, because they do so well generally in the open air; but probably most of those who think so have never seen Verbenas thoroughly well grown in pots. There are certain districts, notably in the west of England, where Verbenas are exceedingly well managed in pots. At Trowbridge, in Wilts, for instance, on the occasion of the annual exhibition which took place during the last week in August, the Verbenas in pots were so well grown as to surprise, by their excellence, frequenters of London exhibitions. The pots in which they were grown appeared over large—they averaged from 10 in. to 12 in. in diameter; but the plants carried from fifty to eighty trusses of bloom. The branches were tied out or trained to oval wire frames, which slanted somewhat, so as to present a face to the spectator; and in this way the whole of the trusses of bloom were well displayed, and not only were the trusses numerous, but they were large, and the individual pips bold and finished. The mode of culture adopted may be shortly described. If plants for early exhibition be wanted, say the end of June and beginning of July, the cuttings are struck as early in February as possible. The strongest cuttings are selected from healthy plants, and are struck in coarse sand, or sand and light mould. They are planted in a moist bottom heat of about 65°, and in ten days or a fortnight are nearly rooted. If the plants be not required for show till the end of August, the middle of March is considered early enough to strike the cuttings; and they are then placed in pans of sand and water in a gentle heat, but very near the glass, to prevent them from becoming weakly. When sufficiently rooted, they are potted singly in small 3 in. pots. The cultivator is particular as regards compost; what he uses consists of one barrow-load of well-decomposed manure, half a barrowful of rich yellow loam, half a barrow of leaf-mould, and a peck or so of sand. Some growers use a little finely-broken charcoal to keep the soil open. When the plants are potted, they are returned to the place in which the cuttings were struck, and set near the glass, particular attention being paid to watering and shading. Green fly is vigilantly watched for, and a fumigation with Tobacco smoke given when necessary. The slightest neglect in this particular is often fatal to the strength of the plants. In about three weeks the plants become fairly established in their pots. The next operation is to pinch off the leading shoots to the third eye from the pot; this not only induces strength, but also causes the plants to break out into five or six leading shoots. When they have made shoots 2 in. in length, a little air is given in order to impart robustness of constitution. By the middle of March they are shifted into 3-in. pots, kept close for a few days, and then air is given them by degrees, watering freely all the while. They are again stopped some three weeks afterwards, and by this time they are making rapid growth and are filling their pots well with roots.

The plants intended for exhibition are now shifted into 8-in. pots and placed in a pit or frame where there is a gentle heat, and by the end of May, if not stopped further, they show for bloom. If plants are required for exhibition in July or August they are stopped several times to induce a shrubby habit of growth. In order to have good bushy specimens, exhibitors do as the growers of specimen Cinerarias for show do, they put three plants in a pot, and so make large bushes. The usual plan is, when bush specimens are wanted, to put the plants in 11-in. pots, using such a compost as that already recommended. Great care is required to keep the plants clean and healthy, for Verbenas are prone to attacks of green fly and red spider. Fumigation is attended to at every stage, and plenty of air is given in hot sunny weather; the lights of the frame are raised back and front 6 in. or so, so that the air can circulate freely, and with a covering of Tiffany, or some such light shading material, thrown over the frame from ten o'clock till three o'clock, according to the weather.

The fineness of the flowers, and their brilliancy of hue is induced by administering liquid manure about twice a week. That made of fresh cow-manure is found to answer best. It is difficult to have good symmetrical plants for exhibition purposes unless they are trained to some kind of frame. This may be of any pattern to suit the exhibitor, and so long as the flowers can be displayed to the best advantage. Some good Verbenas for pot and exhibition purposes will be found in the following selection:—Annie, white and carmine, a pretty striped variety; Apollo, blush; B. A. Hallam, deep mauve; Crystal Palace, rich shaded crimson; E. W. Badger, glossy crimson; Geant des Batailles, deep crimson; James Birbeck, shaded pink; Jupiter, lavender; Magnificus, rosy lilac and crimson; Mons. H. Stenger, white, striped crimson; Queen of Whites, pure white; Rev. C. Peach, pale purple; Rose Beauty, shaded rose; William Hillman, deep black; and Wonderful, bright plum. At Trowbridge, the exhibitors of Verbenas used some seedlings of their own, to have the peculiar qualities wanted in exhibition sorts. They do not trouble to name them, and, except that they get into the possession of local cultivators, are not heard of beyond the district in which they are raised.

D.

BOTTOM-HEAT FOR POINSETTIAS.

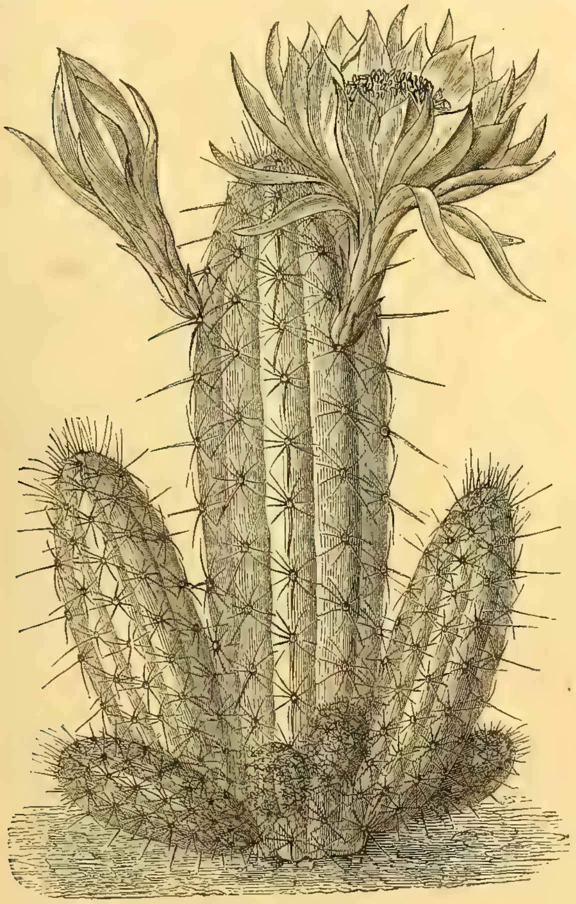
The fact has been far too much overlooked that the size of the gorgeously-coloured bracts of this most valuable winter-flowering plant is chiefly determined by the size of the upper leaves on the stem. Let these be large, wide-spreading, of a deep, dense green colour, and the bracts will be fine in proportion. Of course, the size and quality of the upper leaves will bear a certain and constant relation to the vigour and thickness of the stem. The latter, again, will have been formed and almost finished by this time by previous culture, so that it is now too late either to add to or sensibly modify these; but, taking the plants as we find them now, just on the eve of flowering, it is not too much to affirm that the size of the coloured bracts may yet be almost doubled by plunging the pots in a bottom-heat of 75° or 80°, and keeping their heads within 1 ft. or 2 ft. of clear glass, and in a temperature of 65°. Also keep the roots liberally watered with house sewage or guano water, and syringe the plants overhead once a day in the morning, unless they are dewed over with the condensed moisture from the sources of bottom-heat. Equal parts of manure and leaves form the best plunging bed for Poinsettias. The same treatment also suits the valuable double variety admirably. There does not seem, in fact, any constitutional difference in the two varieties, except that P. plenissima, or double kind, is rather more compact, and perhaps slightly more slender in habit than the ordinary variety; but the bracts are piled one above the other in the double sort in the most gorgeous manner, and they are infinitely more persistent, each bract continuing on the plant for a much longer period, and the new ones being developed in succession. While this system of bottom-heat developes the bracts to the uttermost on old plants, and infuses into them the most intense brilliancy, it is also specially adapted for the full development of those dwarf single-stemmed plants, produced by the late-rooting of the terminal points of strong shoots. Pot these in 4-in. or 6-in. pots; plunge to the rims in a genial bottom-heat, and water with guano-water, and very large single bracts will be produced. The colour may also be much intensified by raising these plants to within a few inches of the glass. Not only will the bracts be of the utmost brilliance, but the upper tier of proper leaves will often be largely infused with the same colour, as if part of the tints of the bracts had been absorbed by the leaves.

D. T. Fish.

White Chrysanthemum Blooms at Christmas.—The experiment as regards lifting a quantity of white-flowered Chrysanthemums from the open ground into a bed in a greenhouse, referred to last week (see p. 446), has already proved most successful. The plants were lifted on the 29th of last month, and now, just a fortnight from that time, they are covered with expanded flowers of snowy whiteness, and of a most useful size for cutting. Mrs. George Rundle is by far the best kind to grow for this purpose, as it produces flowering branches more freely than any of the others; its flowers are of the purest white when fully expanded, and as each branch produces from two to three side buds besides the central, and, of course, largest flower, its incurved character admits of the entire truss being expanded, and forming a neat, compact head of bloom before it is needful to cut it. The bed in question is about 5 ft. in width and 24 ft. in length, and I find that I could have easily found room for some thirty or forty more plants. What the value of the flowers now produced from the fifty plants will be of course I cannot say, but certainly there will be several hundreds of trusses available for cutting during the present month. Madame Domage is several days later. Its flowers, which open of a pinky hue, become pure white when fully expanded; these are reflexed or tasselled, and are veiy handsome, but produced less freely than those of Mrs. George Rundle. It seems quite possible to secure a late succession of white flowers if plants of Madame Domage were put out behind a north wall during the summer, and lifted as soon as the flowers of Mrs. George Rundle were all cut, and put into the same place to bloom. This would give a continuity of flower for cutting up to Christmas, and, of course, the value of the blooms would be greatly enhanced at that late period of the year.—D.

CEREUS CANDICANS.

This is a vigorous growing kind, the stem of which, when about 5 ft. high, is often 3 ft. round, and the angles large and shallow, rendering the plant solid and heavy looking. The spines, which are in sets of from twelve to twenty, are yellow, from 2 in. to 4 in. long, and very acute. It may be increased by offsets, which it produces freely from the base, and it is easily grown in almost any soil. The flowers, which are pure white, are but sparingly produced; but it is the spines, rather than the flowers, which constitute the chief beauty of this species.



Cereus candicans.

J. Croucher.

Flowering Stephanotis in Small Pots.—Few sweet-scented flowers are more appreciated than those of the Stephanotis, either in a cut state or on the plants, and to have them in abundance on plants grown in 6-in. pots is desirable. This may be accomplished by obtaining strong young plants and growing them on in a moderate temperature, where they can obtain abundance of light, sun, and air. In summer they may be placed out-of-doors in a sunny spot, where the wood will get well ripened. The side shoots should be spurred in to within 1 in. of the main stem, and, when bad weather sets in, the plants should be removed indoors and their shoots tied up to a trellis near the glass. If a little heat be applied in November, shoots will be emitted at every joint, all of which will flower profusely. In this way Mr. Ley, of Croydon, grows hundreds of small plants, the stems of which early in summer are full of bloom from top to bottom, making admirable subjects for indoor decoration. Large plants may of course be treated in the same way; all that is required is to treat them exactly as one would Vines on the spur system, and abundance of flowers will be the result.—S.

Alocasia metallica.—This is one of the most distinct and beautiful of fine-foliaged stove plants, striking in the form of a large ssecimen, and equally serviceable and effective as a small vase or table plant, the young foliage being especially lustrous and handsome. For very large specimens, we select five or six of the strongest crowns or root-stocks, and taking some 15-in. pots, fill them one-third full of crocks, over which is placed a good layer of fresh Sphagnum Moss, to keep the soil from being washed down and blocking up the drainage, as, during the growing season, abundance of water, both at the roots and overhead, is required. The compost which we use consists of fibry turf, peat, charcoal, broken potsherds, and chopped Sphagnum Moss. The crowns or root-stocks, which are long in shape, are raised well up in the centre, packing the soil amongst them, so as to form a cone. If potted in February, they will throw up a quantity of flower-spathes before the foliage, but these should be broken off as soon as they appear, in order to direct the whole energy of the plants to the formation of fine foliage. Smaller crowns, placed three in a 6-in. pot, make fine vase plants in autumn and winter, and single crowns in 3-in. pots are also highly effective in table and plant stands, their polished, shield-like leaves contrasting well with whatever they may be associated. A moist stove temperature suits them best, and when contrasted with golden-leaved Gymnogrammas and Crotons, few plants are more effective. They may be increased rapidly by means of small root offsets. They are not liable to attacks from insects, but a sponging occasionally ensures cleanliness, and greatly enhances the beauty of their leaves.—J. Groom, *Henham.*

Torenia Fournieri.—This is a new and exceedingly beautiful plant, and when the length of time during which it continues in flower is taken into consideration, it may well be thought worthy of a place in every collection of decorative plants, however select such collection may be. The plant is of easy culture, and is readily increased by cuttings. Those under my care, however, were raised from seed, which was sown in a propagating house about the first week of April last. Some of them were in bloom by the beginning of the following June, and the plants have all continued in full flower ever since that time, and are now, nearly the end of October, in great beauty, and appear likely to continue so for some time to come. Most of the plants are growing in pots some 6 in. in diameter, and the soil used is the same as is generally employed for Pelargoniums and other soft-wooded plants. But, remembering something of the habit of growth assumed by the old Torenia asiatica, a few of them were potted into pots made for the purpose of being suspended, and these hung up from the roof of a cool plant-stove, or rather an intermediate house, have succeeded well, and are still very beautifully in flower. The habit of the plant, however, does not render it quite suited to the purpose of being suspended, as it is somewhat erect in its habit of growth, and readily forms a dense bush, and does not require much assistance in the form of stakes. The flowers bear a considerable resemblance to those of the Torenia asiatica, but they are more beautiful, and produced in greater abundance. To secure the production of seed, it is necessary to have recourse to artificial fertilization.—P. Grieve, *Culford*, in "Florist."

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Remarkable Growth in England.—Some of us may have heard of the vigorous growth of certain trees in the Tropics, and the following instance of growth in England may be worth recording:—A Bamboo growing in the conservatory at Syon House sent up a shoot in August, which is now about 6 ft. high and 24 in. round the stem. The Bamboo is Bambusa arundinacea, or one of its forms.

New Zealand Flax in London.—This plant, which may not be enjoyed much out-of-doors about London, should be more frequently grown in pots than it is, being so useful both in houses and out-of-doors. A line of specimens in small tubs, in front of Mr. Wills's fine winter garden at Brompton, is very effective. This Flax is admirably suited for London houses, inasmuch as it could be very effectively wintered in large halls or rooms.

Tropæolums for Winter.—Where cut flowers are in demand, few plants are more serviceable than the scarlet-flowered Tropæolum. Pots are unnecessary, as by planting out vigorous young plants in summer, and training them under the rafts of any cool house, abundance of flowers may be gathered from them throughout the winter. In addition to their value for yielding cut-flowers, the plants themselves, when well studded with blossoms, have a bright appearance at a season when good flowers are scarce.—S.

ORCHIDS.

PLEIONES, OR INDIAN CROCUSES.

Few, if any, of our smaller-growing Orchids are more beautiful than these little gems when well grown, and at this season of the year they are more deservedly popular, on account of the scarcity of bloom in our stoves. They not only form valuable decorative plants, but they are also very useful for furnishing cut flowers. They are plants of easy culture, provided they get the proper treatment, and as the price of them now is within the reach of every one, they might be equally plentiful as the old and beautiful Dendrobium nobile, which is everybody's Orchid. It is not necessary to have special houses for them, as they will grow well in any ordinary stove in which there is a winter temperature of from 55° to 60°. I have found them to succeed best in a mixture of fibry peat, chopped Sphagnum, and a little Cocoa-nut fibre, sufficient sand being added to keep it open. Many cultivators recommend the addition of a little loam, but they are better without it. The pots should be perfectly clean and dry (if new, they should be soaked and dried previous to being used), and should be filled three-quarters full of clean-washed crocks, upon which should be placed a layer of Moss, to prevent the compost from being washed away. Being free surface-rooting plants, the bulbs should be planted well above the level of the pot, say 1½ in. higher in the centre, gradually coming down to the level of the rim. It is very desirable that Moss should be grown on the surface, as it keeps a wholesome moisture about them, in which they seem to delight. They should then receive a gentle watering, to settle the soil, and be placed on a stage or shelf near the glass, and, until they get fairly hold of the soil, the supply of water should be very limited; after they have got established, they may receive almost any amount, taking care to keep the Moss on the surface in a growing state. In the spring and summer months, they will be greatly benefited by being syringed overhead twice or three times a day. This will keep down red spider, to the attacks of which Pleiones are liable. Everything should be done to induce them to make vigorous growth, upon which depends the production of fine blooms. The larger the bulbs, the finer are the flowers. As regards kinds, P. concolor has a pure white lip, beautifully fringed; P. Reichenbachiana has rose-coloured sepals and petals, and a white lip, streaked with purple and crimson; one called Hookeri is in the way of maculata, but this I have not seen. The four commoner species are P. Wallichiana or præcox, as it is often called, on account of its early-flowering properties. This is the largest of the whole species, its flowers frequently measuring from 4 in. to 5 in. across, and their colour is a rich rose, the margin of the lip being finely serrated. P. lagenaria, which is a little later in blooming, is the commonest of the genus, and perhaps the easiest to cultivate. P. maculata is, however, the prettiest of the whole genus, its pure white sepals and petals contrasting beautifully with the white, yellow, and magenta lip. The last to flower is P. humilis, which is deservedly a favourite. Its sepals and petals are a delicate lilac, and the lip is margined with white, and exquisitely fringed. All the above are well worth growing; and if amateurs only knew the ease with which they may be cultivated, these Pleiones would, I am sure, become just as universal as a Hyacinth or a Tulip.

Pendleton. W. C.

SEASONABLE NOTES.

Odontoglossum membranaceum and its varieties have been somewhat depreciated by many; they are, nevertheless, charming plants, and amateurs who do not possess them should do so without delay. They are now pushing up their blooms, and may, with care, be kept in full beauty for two months. The variety named "decora" is the finest marked and largest, but this is both new and rare. Other winter Odontoglossums consist of pulchellum majus, the flower-scapes of which bear numerous thick fleshy flowers, which, with the exception of a slight stain of yellow on the lip, are pure white; it is delicately perfumed, and lasts long in full beauty. Odontoglossum Insleayi Leopardinum is often called an autumn-blooming variety, and in a general way it may be so considered; this year, however, it is only now beginning to push up its flower-spikes, so that its rich-coloured blossoms will only be open about mid-winter, a circumstance which greatly enhances their value.

Cælogyne cristata, which stands unrivalled for the snowy whiteness of its large blooms, is now beginning to push up its flower-spikes; and where more than one specimen is grown, some should be removed to a cold house in order to retard them, thus obtaining a succession of its beautiful flowers. There is a variety of it having a pale lemon blotch upon the crests of the lip, which naturally blooms later than the normal form, and which is specially valuable for maintaining a succession of flowers; and this year a summer-flowering variety has made its appearance, so that it will not now be a matter of much difficulty to have plants of this Cælogyne in flower for about nine months. They should not be over-watered at any time, but it should be borne in mind that when they are removed to a lower temperature less will be required than when they are in a higher one.

Calanthe vestita, and its varieties, now opening their flowers, should receive the same treatment previously recommended for C. Veitchi; they produce abundance of blooms, which are very valuable for bouquet making.

Sophronitis grandiflora, a veritable floral gem, bears scarlet flowers, which last in perfection for many weeks; the blooms on different plants, however, differ greatly, some measuring as much as 2½ in. in diameter.

Cattleya Loddigesi may be said to be almost a perpetual bloomer; its flowers, too, are large, thick, and waxy in texture, therefore they last a long time in perfection, and their colour rose—or rose and white—is chaste and pretty; nothing, indeed, is more charming than a bloom of this Cattleya and a frond of Adiantum for the decoration of a lady's hair, or for a button-hole bouquet, and with but a few plants of it blooms may be had in spring, summer, autumn, or winter. Cattleya marginata is now quite a gem, its large rose and purple flowers being developed to most advantage under cool treatment, and thus managed the growths are not drawn out so long as when placed in strong heat, but resemble more imported pseudo-bulbs, and every growth blooms. Of C. Trianæ the varieties are legion; they are now pushing their blooms through the spathes, and will soon be a blaze of beauty; those who do not possess C. Trianæ or its varieties should take advantage of this, the blooming season, to add it to their collections, selecting the particular shades of colour which they prefer. They may be obtained having rosy sepals and petals, and intense deep purple lip, through all gradations of these colours up to pure white.

Oncidium ornithorynchum, like O. incurvum is quite an exception to the predominant colour in this genus; its scape, which is branching, produces in great abundance flowers of a soft rose colour, which yield a grateful perfume, somewhat resembling that of Heliotrope. These qualifications, added to its compact habit, and easy management in a cool house, should recommend it to all lovers of winter blooming Orchids.

A careful search should now be made amongst Orchids, especially those which have been repotted or newly surfaced with Sphagnum, for the Onion snail (Zonites alliaria), which seems to be unusually prevalent this season. It not only eats the points of the roots off, but also attacks the flowers when in the bud. Beetles are also great destroyers of Orchid roots and flowers, and a continual war must be waged against them. Care should also be taken that nothing suffers from drought, *i.e.*, through over-drying; avoid, however, the opposite extreme, for too much water about the house on a cold night will bring about disastrous results. Look well after red thrips and white scale, pests which are very apt to increase rapidly during the dry season. To destroy the former, dust the axils of the leaves with Tobacco powder, allowing it to remain undisturbed for a few days; the scale must be removed by washing with soft soap and tepid water. W. H. G.

Cattleya gigas a Winter-flowering Plant.—We have a plant of this Cattleya with twelve fully-expanded flowers upon it. It is deliciously fragrant, the perfume being compared by some to a mixture of Violets and Primroses.—Richard Carr, *Taverham Hall.*

Wintering Disa grandiflora.—Last July I purchased a plant of this Orchid, then in a greenhouse. I grew it on in a Wardian Case until May, when I put it out with Sarracenias under a handlight. In August I found that the main growth had either died down or been eaten off by slugs (I fancy the latter); but suckers were growing freely. I then plunged it in cocoa-nut fibre in an open, shady border; and now I find the main stem developing itself again, so that it has had no rest. Ought it to die down altogether? What shall I do with it now? The small pot seems full of bulbs. I have no greenhouse, but can either grow it out-of-doors in a frame, or indoors in a large Wardian Case as before.—A. J. [Disa grandiflora should not die down entirely, nor should it be dried up to induce rest. It will commence growing now, and may be grown in a frame or Wardian Case if kept tolerably close; a cool greenhouse would be best if available.]

ROYAL NURSERIES. SLOUGH.

Apart from their importance in a commercial point of view, the Royal Nurseries at Slough possess considerable interest. Here may be found many effective arrangements, in the way of trees, shrubs, and flowers, entirely devoid of that formalism which more or less necessarily characterises nursery gardens. Good illustrations of spring and summer gardening are yearly carried out on borders and beds on each side of a central promenade running through the middle of the grounds. Mr. Turner's house, of which the annexed is an illustration, is one of which any nurseryman may justly feel proud. Its verandahs and walls are clothed with gracefully-hanging festoons of Wistaria sinensis, from which, throughout the summer and, indeed, until winter sets in, depend large clusters of bluish-lilac flowers; and, even late in autumn, the various hues of the fading foliage combine to make an effective display. Contiguous, but almost hidden by the Wistaria, is a small house devoted to winter flowering Tree Carnations. As fast as the plants in other quarters show bloom, they are brought here and placed on a stair-like stage, with which the house is provided, and a succession of beautiful sweet-scented blossoms is thus kept up throughout the winter. Among some of the best kinds may be enumerated Sir Garnet Wolseley, a full and distinct flower with buff ground, striped and edged with bright scarlet; Scarlet Defiance, a free blooming kind, with vivid scarlet smooth-petalled flowers of good substance; Rose Perfection, and a beautiful white flowered variety named Guelder Rose. Many others, possessing equally good qualities, raised by Mr. Turner, are to be found in bloom, although, of course, the best of the season for the display of their bright colours is now over. Preparations for spring gardening are now being carried on. Small and effective plants, in conjunction with dwarf ornamental Conifers, are planted on small banks and borders. Ordinary shaped beds, in the centre of which are standard Paulownias, Yuccas, and Golden Catalpas, are planted with Daisies, Auriculas, and other spring flowering plants with good effect. Surrounding these are ornamental shrubberies, containing Golden Thujas, graceful Deodars, and other choice plants, interspersed with standard Acacias, Cornus Mas variegata, and variegated Hollies laden with berries. Large patches of the neat pyramidal habited Thuja Vervaeneana, clothed to the ground with bright golden foliage, contrast effectually with plantations of the bronze tinted Cryptomeria elegans and the bright green of the Deodar. Cotoneaster microphylla here forms effective plants grown in the form of standards. They are grafted on clean 4 ft. or 5 ft. stems of a strong growing kind; the branches are allowed to assume their naturally drooping habit, and isolated on lawns or allowed plenty of room in front of shrubberies, such plants would be very attractive at this season, when studded with bright coral-coloured berries. I noted good specimens of the large-leaved Azorian Laurel (Cerasus lusitanica azorica) a kind upright in habit, and bolder and more striking in appearance than the common Portugal Laurel. Roses constitute a special feature in this nursery; to their culture many acres of land are devoted, and although at this season the trees are all but leafless, the large fields of Briers which were budded with new and popular kinds in summer, are by no means uninteresting. New Roses are, as far as can be arranged, planted near home in order that they may be more frequently seen, and their merits and demerits more accurately determined. The removal of Roses has this year been deferred later than usual on account of the dry state of the soil; but now, as it is getting moist, they are being removed in large quantities daily. Among late flowering kinds Mrs. Baker has been one of the best, and even late in October could be seen several of its lively carmine buds and flowers. On plants of Duchesse de Vallombrosa, too, were observable some really good blossoms. To Marérchal Niel and other Tea Roses a wall 500 ft. to 600 ft. long and 12 ft. high is devoted; the plants are remarkably strong and healthy, no signs of mildew whatever being observable, and in early spring they are loaded with blossoms. The aspect of the wall is due south, and on the top is Ivy which, no doubt, greatly preserves the buds from early spring frosts. The plants were budded on the

Wistaria on Mr. Turner's House at Slough.

Brier stock, and are growing in soil of a rather stiff clayey character. During summer, the surface of the border is heavily mulched, which keeps the roots cool and moist, and enriches the soil. Pot Roses, as is well known by those who have visited our London Rose shows, are well grown by Mr. Turner. The plants this year have made extraordinary growth, and have assumed unusual proportions. These, after having flowered, are potted, and placed in an open position out-of-doors to ripen their wood, and a few are pruned and placed indoors at one time according to the period at which they are required to be in bloom to suit the shows. Pinks, Carnations, and Picotees are made specialities of in this nursery both for growing in beds and for pot culture. To obtain plants a large stock is grown in 8-in. or 9-in. pots, the surface of the soil being several inches from the rim of the pot, in order to allow of earthing up. When well established, the side shoots of the plants are pegged down, and 1 in. or so of good sandy soil is placed round their bases. When well rooted these are taken off and potted in small pots, and placed in frames or in the open air. By this method the young plants are found to make stouter and harder growth than when layered from plants in open borders, and are considered in much better condition for planting-out or growing on for flowering in pots. Auriculas constitute one of Mr. Turner's specialities, but of course, at this season, very little flower is to be seen on them. Long ranges of pits and frames filled with healthy plants of them were, however, observable, and which in spring will evidently make a fine display. Standard Aucubas, loaded with berries, are grown here by hundreds, also all kinds of plants suitable for small gardens and window decoration during winter. The Pampas Grass is grown largely here in pots plunged in the open ground; thus treated the plants are easily removed, and if planted out of pots are more likely to succeed than if transplanted from the ground at once, as is too often the case, and the cause of the death of many good plants of this ornamental Grass. Strawberries are extensively grown here, both in the open ground and in fruiting-pots; the latter are selected from the strongest plants which can be got, and grown on liberally in rich loam in an open situation, where they make stout leaves and crowns, an important point as regards the production of fruit. To supply plants for border planting, the earliest runners from permanent plantations are pegged to the ground, and when they have taken root are lifted and replanted 3 in. or 4 in. apart in a bed of good soil; here they get hardened, and emit fresh roots and make strong plants, when removed to their permanent quarters, much sooner than lanky, soft-rooted plants. The kinds most favourably thought of here are President, Vicomtesse Héricart de Thury, and La Grosse Sucrée for forcing, and Sir Charles Napier and Sir Joseph Paxton for later fruiting.

The indoor department of this nursery embraces all kinds of popular garden plants. Chrysanthemums are just now, of course, among the most striking plants coming into bloom. Hundreds of all the best kinds are grown in the form of standards. Their stems are from 1 ft. to 3 ft. high, and they are furnished with neat, well-shaped heads covered with bloom-buds. To obtain these standards, cuttings are struck early in spring and potted on in good soil; the main shoot is allowed to grow to the desired height, and then stopped. Side shoots are then soon produced, four or five only being retained near the top of the stem. When the wood of these becomes firm, shoots from other kinds are grafted on them, and thus several sorts are produced on one head; of course, to carry out this method perfectly such kinds as are well known to bloom at the same time are only used together. The soil in which they are grown consists of rich loam, and a surfacing of sheep manure is given them as soon as they have formed their bloom-buds. For vases indoors or for conservatory decoration nothing surpasses these standards, and their pots can easily be hidden by a few drooping Grasses, Ferns, or Ficus repens. Other Chrysanthemums are grown with a stem 6 in. high and cup-shaped heads, consisting of eight to twelve shoots, but none of the one-stemmed plants, 6 ft. high, which are too often seen, are here to be found. Under cover of a shed in a northern aspect, I noticed about 3000 plants of white-flowered kinds being kept back for a display at Christmas. In keeping back Chrysanthemums it is necessary that the bloom-buds should be formed before placing them in such a position as the one described, otherwise they are apt to go "blind," or the flowers would be very few indeed. The specimen Azaleas are uncommonly fine this season, every shoot being furnished with bloom-buds. Camellias, too, are full of buds; the plants have just been housed, having been out-of-doors, together with many other hard-wooded plants, during the summer. Camellias here are potted entirely in peat and sand, and both in colour of foliage and general health they are equal to any which I have ever seen. A very good plan is here adopted for shading hard-wooded plants during the summer months. A series of lines of Poplars are planted from 20 ft. to 30 ft. apart, more or less, and between these are placed the plants on beds of ashes. Whilst the Poplars shade the plants from the scorching rays of the sun, they do not offer too much shade, and they allow air to circulate freely among them. Pelargoniums have always been grown well at Slough, as any one who has visited the London shows can testify; the plants this year look very strong and healthy; they are grown in lean-to houses near the glass. After flowering, they are placed out-of-doors, to ripen their wood, and then they are cut back to some three or four eyes or more, as the shape of the plant may require. When they break into leaf again, they are shaken out of their pots, and have their coarse roots cut back, and potted in rather stiff loam and manure, afterwards shifting them on until they are in their flowering pots. New kinds are grown on yearly to succeed the old ones, and seedlings are annually being raised; these are allowed to flower, so that their merits may be decided upon, and if found inferior, or only as good as existing kinds, they are at once thrown away, keeping only such as are considered a step in advance of such existing kinds as they most resemble. I noticed in a range of frames the finest batch of the useful flower-garden plant, Polemonium cœruleum variegatum (Variegated Jacob's Ladder), which I have ever seen. The chief reason, it is said, why people cannot propagate this plant readily is because they divide it in the autumn instead of in the spring. Here the plants are taken up on the approach of frost, potted, and wintered in frames. In spring they are divided and potted separately, subjected to a little more heat, and they appear to grow as freely as Scarlet Pelargoniums. In a ridge and furrow-roofed house, devoted to hard-wooded plants, are very fine specimens of Lamarque and Gloire de Dijon Roses budded on the Manetti stock; these, together with Lapageria rosea (now in full bloom), cover the whole of the roof, rendering shading unnecessary, and they yield hundreds of valuable Roses in spring and summer. Verbenas are here largely grown. A whole lean-to house is devoted to stock plants, which are grown expressly for that purpose in pots. The more leggy the plants are, the better they are liked, as they resist damp and mildew better than compact leafy plants would do. In a house filled with Ferns I noticed a plan which might be more frequently adopted with advantage; the house is a span-roofed one, with a stage each side, and a path running through the centre; under the stages are placed stones, clinkers, and soil, in which are planted Ferns, Lycopods, Panicum variegatum, Fittonias, and other dwarf-growing, ornamental-leaved plants. A board is placed on edge to prevent the heat from the hot-water pipes drying them up too much, and here they thrive luxuriantly, and not only produce a grand effect, but utilise space and furnish abundance of material for cutting for bouquets, &c. Libonia Penrhosiensis is a plant largely grown here; it is of more compact habit, and has larger leaves than the well-known L. floribunda; its flowers, too, are larger, and they are produced in greater abundance.

Plants in flower are of course just now scarce, but one little house, devoted to such plants as are in flower, was very gay with Ericas, Bouvardias, Fuchsias, and the bright scarlet Salvia splendens. Among Ericas the most beautiful in flower were E. verticillata rubra and E. mammosa, two kinds which ought to be more extensively grown than they are on account of their large, delicate pink and bright scarlet blossoms, which last in perfection for a long time during the winter months. In a large house full of healthy-looking Crotons, Dracænas, and other ornamental stove plants, were noticeable good flowering examples of the effective Pancratium speciosum, the pure white flowers of which are so much prized for bouquets, table arrangements, &c. Pot Vines by thousands, and, indeed, all imaginable nursery stock, appeared to be grown here in the best possible way, not excluding the Potato Schoolmaster, which Mr. Turner has exhibited so successfully this season.

S.

ROSES.

NEW ROSES OF THE PAST AND PRESENT YEAR.

Of the novelties introduced in 1875-6, the following have commended themselves most to our judgment; *Hybrid Perpetuals*: Abel Carrière, Avocat Duvivier, Duc de Montpensier, Duchesse de Vallombrosa, Gustave Revilliod, Jean Liabaud, Madame Ferdinand Jamin, Madame Prosper Laugier, Marguerite Brassac, Monseigneur Fournier, Oscar Lamarche, Sultan of Zanzibar, Triomphe de France. *Tea-scented*: Madlle. Marie Berton, Maréchal Robert, Souvenir de Madame Pernet. Of the Roses of the present year (1876-7), the following seem to us the best:—*Hybrid Perpetuals*: Madlle. Emma All, Marie Louise Pernet, Marquise Adèle de Murinais. *Tea-sconted*: Comtesse Liza du Parc, Madlle. Lazarine Poizeau, Souvenir de Georges Sand, Triomphe de Milan. We do not describe these varieties, because their full descriptions may be seen in one or other of the leading Rose catalogues, which all lovers of Roses will be sure to possess. Of Roses not yet in commerce, but which will probably be sold in the spring of 1878, May Quennell (Postans), Penelope Mayo (Turner), and Mrs. Laxton (Laxton) have been shown good during the present year.

Of new Roses coming from France this autumn, the following announcements have reached us up to the present time, but this list will, no doubt, be considerably augmented:—

Alfred K. Williams (H.P.), carmine, changing to magenta, large and full, imbricated; Amœna (H.P.), bright rose, reflexed with violet, centre carmine; a seedling from Victor Verdier; Angèle Fontaine (Bourbon), carmine rose, large and of perfect form; opening well and very perpetual; growth vigorous; Barthélemy Joubert (H.P.), very bright cerise, large and full; growth very vigorous; Dames Patronnesses d'Orleans (H.P.), deep crimson, large and full, very free; growth vigorous; Edouard Pynaert (H.P.), bright Gooseberry red, shaded with carmine, large, full, and globular; a seedling from Antoine Ducher; Evêque de Luxembourg (H.P.), deep purple, shaded with violet, centre velvety crimson, large and very sweet; growth very vigorous; Fontenelle (H.P.), bright carmine red, very large, full; growth very vigorous; flowers in clusters; La Toulousaine, (N.P.), flesh colour, changing to rose, of medium size, full and finely formed; growth very vigorous; Louis Richard (Tea-scented), coppery rose, sometimes with deep red centre, large and full; growth very vigorous; Madame Alexandre Bernaix (Tea-scented), flowers rose colour, edges of petals shaded with white, large and full, very distinct. A Silver Medal has been awarded to this variety at a Flower Show in Lyons, June, 1877. Madame Anna de Bésobrasoff (H.P.), very bright cerise, changing to purple, large and finely shaped; growth vigorous, very perpetual; a seedling from Charles Lefebvre; Madame Chignard (H.P.), bright clear red, large and full; growth very vigorous; Madame de Laboulaye (H.P.), pale rose, with bright rose centre, large and full; growth vigorous; very perpetual; Madame Dorlia (H.P.), bright cerise, shaded with purple, large and of good form, foliage fine; growth vigorous; Madame Gabriel Luizet (H.P.), satin rose, petals large and of great substance, flowers very large and full; growth vigorous; Madame Jeanne Bouyer (H.P.), pink, the colour of the China Rose; very large, full, and of fine petal; growth very vigorous; Madame la Marquise d' Hervey (H.P.), velvety red, shaded with carmine, very large and full; growth very vigorous; Madame Louis Donadine (H.P.), flesh colour, with deeper centre, very large and full; a sport from Countess of Oxford; Madame Maurice Kuppenheim, salmon yellow, sometimes rosy, reverse of petals slightly coppery, large, full, and of fine petal; growth very vigorous; Madame Roger (H.P.), very pale rose, almost white, large and full; growth very vigorous; Madame Théobald Sernin (H.P.), currant red, shaded with carmine, large, full, and finely shaped; growth vigorous; Madlle. Anne Marie Danloux (H.P.), white, centre slightly rosy, of medium size, full and finely formed; growth very vigorous; Madlle. Blanche Durrschmidt (Tea-scented), flesh colour, tinted with rosy salmon, changing to white; growth very vigorous; a seedling from Madame Falcot; good for massing. Awarded a silver medal at a flower show in Lyons, June, 1877. Révérend Trautmann (H.P.), bright carmine, with rosy centre, reverse of petals lake red, large, full, and finely formed; Robusta (Bourbon), velvety fiery red, changing to purple, of medium size, full, flowering in clusters; growth very vigorous; Rose à Bois Japé (H.P.), flowers bright cerise, large, full, and globular; growth vigorous; the wood of this variety is very remarkable, being banded with yellow, green, and red, forming together a strange variegation; Souvenir d'Adolphe Theirs (H.P.), brilliant red, shaded with vermillion, extra large, very free; growth very vigorous; a seedling from of Countess of Oxford; Souvenir de Mlle. Marie Détrey (Tea-scented), pale salmon rose, sometimes bright rose, large, full, and finely formed; growth very vigorous.

Of my own novelties, the following extract from the "Journal des Roses" will, perhaps, be more acceptable than anything I can myself say concerning them:—"Of Messrs. W. Paul & Sons new Roses, May Quennell obtained a first-class certificate; it is a beautiful well-formed Rose, with very close petals of a bright crimson colour, becoming magenta on the outer petals; it is one of the best Roses yet sent out by Mr. Paul. Another new kind, named Masterpiece, has flowers very large, full, and globular, perfect, in short, in form; its colour is pink, shaded with carmine; this variety is one which cannot fail to become popular, both as an exhibition kind, and for ordinary cultivation. A charming little Moss Rose, called Little Gem, is also a kind which will do credit to the Waltham Cross collection."—Paul's "Rose Annual."

THE BEST FORTY-EIGHT ROSES.

I had thought that the ultimate result of the poll—I mean the best forty-eight Roses—might be compared with some degree of interest with the best forty-eight selected by a rosarian across the Atlantic. Accordingly I wrote to Mr. Ellwanger, of Mount Hope Nurseries, Rochester, New York, to whom those who have been desirous of seeing the age of Roses and the raisers' names are, as well as myself, very deeply indebted; and I now place side by side his forty-eight in order of merit and the collective election forty-eight:—

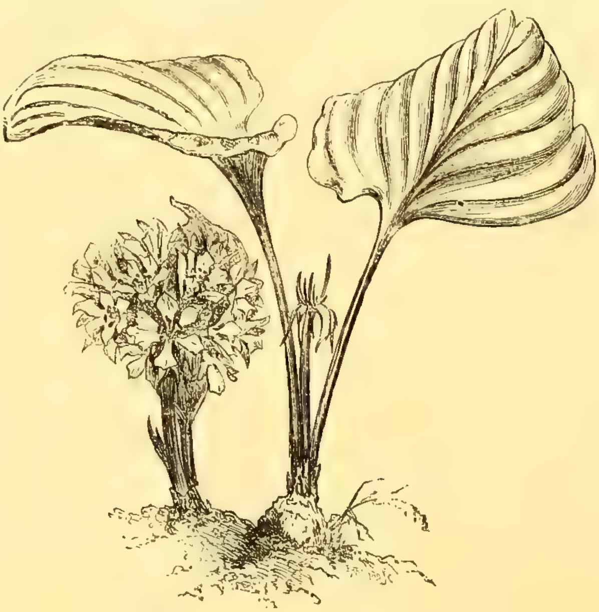
The Election List.	*Mr. Ellwanger's List.*
1. Marie Baumann	1. La France
2. Alfred Colomb	2. Maréchal Niel
3. Charles Lefebvre	3. Marie Baumann
4. La France	4. Louis Van Houtte
5. Maréchal Niel	5. Alfred Colomb
6. Baronne de Rothschild	6. Charles Lefebvre Ferdinand de Lesseps
7. François Michelon	7. Catherine Mermet
8. Louis Van Houtte	8. Marie Van Houtte
9. Etiénne Levet	9. Madame Victor Verdier
10. Marquise de Castellane	10. Marie Rady
11. Madame Victor Verdier	11. François Michelon
12. Duke of Edinburgh	12. Marquise de Castellane
13. Marie Rady	13. Baronne de Rothschild
14. Comtesse d'Oxford	14. Etiénne Levet
15. Dr. Andry	15. Eugénie Verdier
16, Sénateur Vaisse	16. John Hopper
17. Xavier Olibo	17. Abel Grand
18. Mdlle. Eugénie Verdier	18. Comtesse d'Oxford
19. Edward Morren	19. Sénateur Vaisse
20. Catherine Mermet	20. Victor Verdier
21. Horace Vernet	21. Gloire de Dijon
22. Marguerite de St. Amand	22. Comte de Sambac, T.
23. Emilie Hausburg	23. Capitaine Christy
24. Ferdinand de Lesseps	24. Niphetos
25. Dupuy-Jamain	25. Cheshunt Hybrid
26. Camille Bernardin	26. Prince Camille de Rohan
27. John Hopper	27. Comtesse de Serenye
28. Reynolds Hole	28. Marie Cointet
29. Victor Verdier	29. Rubens
30. Prince Camille de Rohan	30. Belle Lyonnaise
31. Marie Van Houtte	31. Cécile de Chabrillant
32. Capitaine Christy	32. Marguerite de St. Amand
33. Madame Lacharme	33. Madame de Ridder
34. Devoniensis	34. Thérèse Levet
35. Mons. E. Y. Teas	35. Horace Vernet
36. Duke of Wellington	36. Exposition de Brie
37. Souvenir d'un Ami	37. Souvenir de la Malmaison
38. Pierre Notting	38. Marie Ducher
39. Souvenir d'Elise	39. Fisher Holmes
40. Marie Finger	40. Pierre Notting
41. Marie Cointet	41. General Washington
42. Fisher Holmes	42. Madame Noman
43. Mons. Noman	43. Mdlle. Bonnaire
44. Comtesse de Serenye	44. Madame Berard
45. Sir G. Wolseley	45. Madame Trifle
46. Madame C. Wood	46. Maurice Bernardin
47. Star of Waltham	47. Reynolds Hole
48. Annie Wood	48. Marie Finger

Mr. Ellwanger's list is placed in order of merit, and it will be seen that in his selected forty-eight he has named twenty-nine of those selected by the various electors. His list, as compared with ours, is chiefly remarkable for the Tea element, for, counting Maréchal Niel, there are eleven as against six in our list. Mr. Ellwanger further adds that he has bracketed Charles Lefebvre and Ferdinand de Lesseps, because, "though not the same," they "at many times strongly resemble each other, and I couple them as being of equal value." He also further adds—and the remark is of interest, touching the effect of climate on different yet similar Roses—"In relation to Mdlle. Eugénie Verdier and Marie Finger I would say they are with us quite distinct sorts; the former I consider decidedly the more refined and beautiful."—"Journal of Horticulture."

NOTES FROM KEW.

This week there is not much of interest to record concerning outdoor plants, the only one being the South European Medicago arborea, which is in bloom by the wall of the herbaceous ground. M. arborea, the Cytisus of the ancients, ought to be planted wherever a sufficiently-sheltered spot can be spared; as, in such positions, it is seldom found without a number of its lovely yellow flowers. It is the only species in the large genus Medicago that can strictly lay claim to being a shrub, by far the greater proportion being trailing annuals. According to Loudon, this plant abounds about Naples and in several islands of the Greek Archipelago, where the Turks use the wood to make handles for their sabres. In the greenhouse (No. 4) is a pretty South African Polygalaceous shrub, Muraltia Heisteria, introduced from the Cape by Masson in 1787. The Gorse-like compact growth is studded with charming little purple flowers; and, as no special care or skill is required in its cultivation, this should be more largely grown as a decorative greenhouse plant, particularly as it can be had in bloom nearly throughout the year. The Palm-house contains a few plants that merit present mention. First in beauty and exceeding richness of colour, comes the West Indian Rondeletia speciosa, one of our very best winter-flowering stove plants. The vivid scarlet blossoms are freely produced, and with the habit we are all well acquainted. Goldfussia isophylla is a dwarf, bushy Indian Acanthad that makes a good show at this time of the year, with its fine blue flowers. G. glomerata is a species with larger flowers and broader leaves than the last-named; both surfaces are covered with reddish-purple hairs, which look very beautiful when seen in a proper light. Gomphia Theophrasta, with its acutely-serrulate leaves about 1 ft. long, and its large panicles of golden-yellow flowers, is a handsome member of a large and beautiful genus, of which, however, but few species have found their way into cultivation; the present one was introduced some years ago from South America by Linden, of Ghent. Schaueria calycotricha is a fine free-flowering Justicia-like Acanthad from Brazil, the bright straw-coloured corollas and exserted yellow stamens affording a pretty contrast to the foliage below them. The fine blue of Plectranthus amethystinus and the peculiar form of its flowers are well worthy of notice. Clerodendron splendens in the stove is a grand, evergreen, close-habited climber, from the woods of Sierra Leone; the large clusters of splendid crimson flowers are very effective. In the cool compartment of the new range, there are a number of specimens of Nerine flexuosa and N. crispa; both have rosy-white flowers, the former being much the larger of the two, and lacking the pleasing undulations which render the flowers of N. crispa so charming. Among the Orchids which we noticed, the following are the most striking:—Epidendrum evectum is one of a section in which the stems are leafy and elongated; sometimes, as in the present case, growing to a length of about 9 ft. The terminal inflorescence is made up of about twenty or thirty deep, rosy-purple flowers. E. equitans has yellowish flowers, and a habit resembling, in a remarkable degree, many of the Irids. E. ellipticum from Rio de Janeiro, grows about 2 ft. high, and has pretty heads of rose-coloured flowers. E. ibaguense is rather deeper in colour and grows somewhat larger than the last-named. E. glumaceum derives its name from the long pointed scales—like the glumes of Grasses—out of which spring the racemes of flowers; in habit and sweet odour it is like E. fragrans, but the labellum is convex and striped with pink. E. paniculatum var. racemosum differs considerably from the type; instead of the pretty pink flowers generally seen in some collections, this variety has much reflexed sepals, which, together with the lower part of the column, are green; the upper part and lip are white, the latter variously marked with deep red-purple. Sigmatostalix radicans is a very neat-growing little plant with narrow Grass-like leaves, elongated pseudo-bulbs, and little panicles of small flowers, in which yellow, white, green, and reddish-brown, combine to make a pleasing show. The unopened flowers of Sarcanthus pallidus are very like the head and beak of a duck in miniature, and the branched panicle bears a profusion of small flowers.

G.



Brisbane Lily (Eurycles australasica).

PLATE C.

THE GENUS EURYCLES

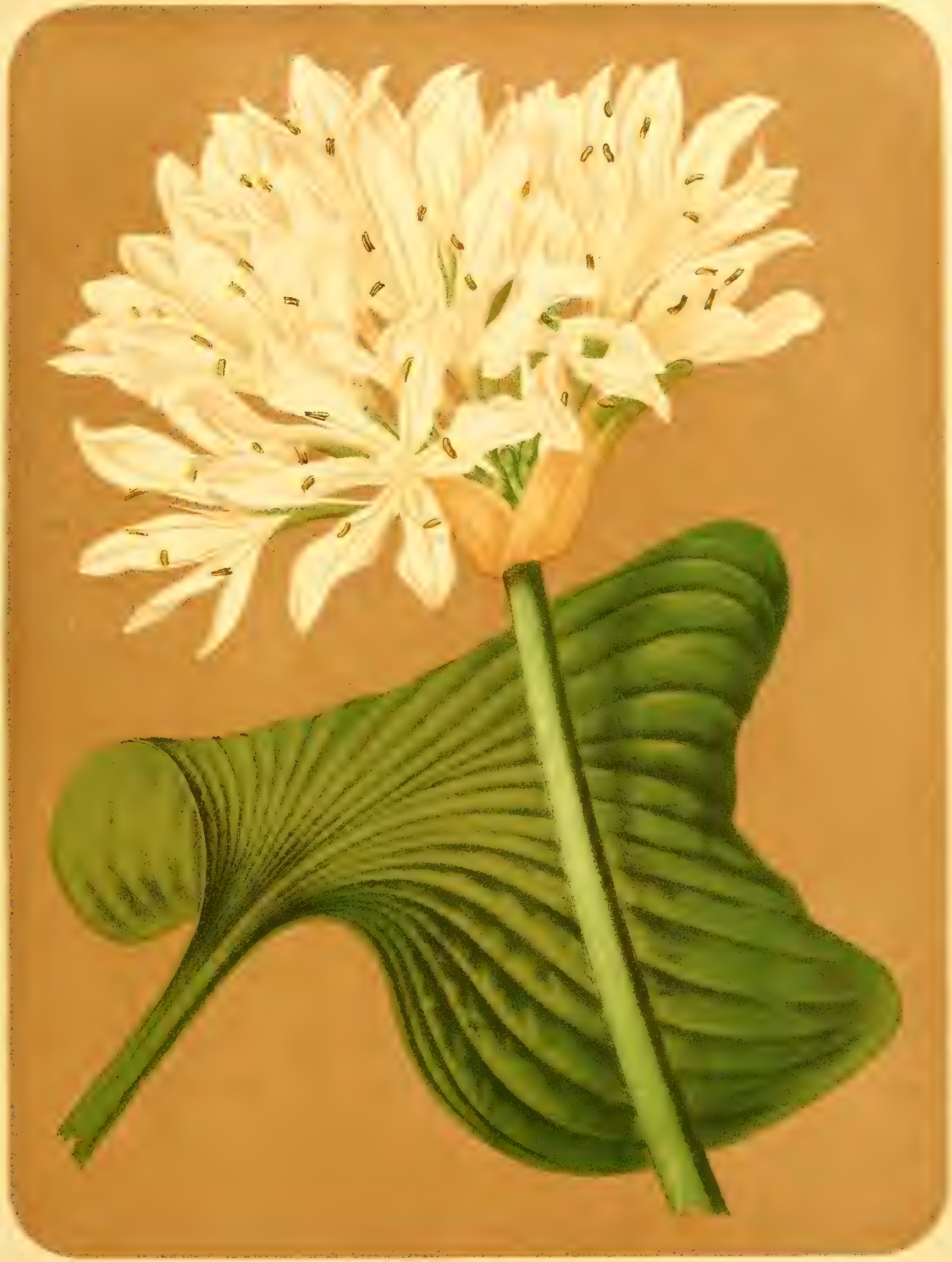
(WITH A COLOURED FIGURE OF E. AUSTRALASICA).

Drawn by Mrs. DUFFIELD.

A small genus of Pancratioid white-flowered Amaryllideæ, formerly referred to the genus Pancratium itself, but subsequently established as an independent genus, on account of the small corona, which is cleft, nearly to the base, into six segments. Mr. Bentham ("Flora Australiensis," vi., p. 456) puts all the known forms under two species; but, from a horticultural point of view, there are three easily distinguished forms. They require warm greenhouse treatment, and succeed well in a compost of loam, leaf-mould, and sand. After they have made their growth, the usual rest in a dry state should be given. The horticultural public is indebted to Messrs. Veitch for the re-introduction of the fine species of which a coloured figure is given in this number of The Garden. Although the same species had been in cultivation in this country before, the Floral Committee of the Royal Horticultural Society awarded Messrs. Veitch a first-class certificate for this plant when they exhibited it at one of the meetings last spring; and they also received from the Royal Botanic Society a certificate of merit. These recognitions of its value as a decorative plant, are a sufficient recommendation, but I may add a word of praise from having seen the living specimens.

Amboyna Lily (Eurycles amboinensis).—This was the form cultivated by Philip Miller at Chelsea, nearly 150 years ago, and it is decidedly the most ornamental. If we separate E. amboinensis from E. australasica, then the plant figured should bear the former name, and if the two are combined as one species, then, according to the rules of priority of names, amboinensis should be selected to designate the species, as Mr. Bentham has done in the work quoted above. Unfortunately, the plant has been certificated and mentioned in the gardening periodicals as E. australasica, and by this name it will doubtless continue to be known. The distinctive character of the Amboyna Lily is in the deeply cordate base of the leaf, numerous flowers (usually more than a dozen in each umbel, and sometimes as many as a score), and in the large size of the flowers. Whether this form extends to Australia, I cannot say; but from a record of a locality (Island of Cairncross, Queensland, Veitch) in Benthams' "Flora Australiensis," it is possible that this locality was the source whence Messrs. Veitch obtained their stock. The original introduction into Europe was effected by the Dutch, probably from one of the islands of the Malayan Archipelago. Specimens exist at Kew from the island of Zebu, one of the Philippine group, and from Malacca; and it is also a native of the Island of Amboyna. And, according to Labillardière, it was abundant in 1793 in the vast forest of Mount Panangouna, Java, growing under Teak trees. Vigorous plants have nearly spherical brown-coated bulbs about 2½ in. in diameter, long-stalked, prominently-ribbed leaves, the blade of which sometimes exceeds 1 ft. in breadth, and the flowers are from 2½ in. to 3 in. long. Salisbury ("Paradisus Londinensis," t. 84) figures the same plant under the name of Pancratium nervifolium; and, among its other numerous synonyms, Eurycles sylvestris may be mentioned. The flowers appear a little in advance of the leaves, especially in a wild state, or at the same time; but this depends probably upon the season. Allan Cunningham states that the Australian species vary in this respect.

Australian or Brisbane Lily (E. australasica, Bot. Reg., t. 715).—This is near the last, but smaller in all its parts; the leaves are scarcely at all cordate at the base; the umbels about eight or ten flowered; and the segments of the perianth are narrower. It was in cultivation at Kew in 1821 from bulbs sent home by Allan



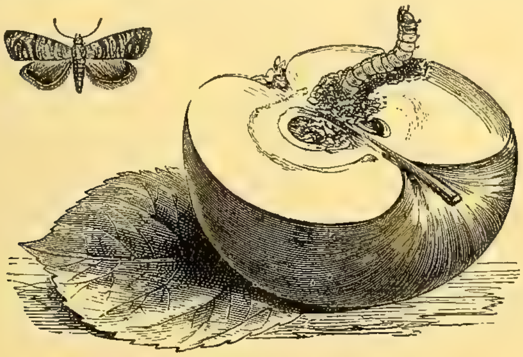
THE BRISBANE LILY (EURYCLES AUSTRALASICA)

Cunningham from Cairncross Island, where they grew in a chalky soil under the shade of trees near the sea-coast. It is probable that this and the foregoing are connected by intermediate forms, and the same locality being attributed to Veitch by Mr. Bentham—if the source of the plant here figured—it is possible that both are found in the Island of Cairncross. Whether this be the case or not, it is worth knowing of the existence of inferior varieties.

Cunningham's Lily (E. Cunninghami, Bot. Mag., t. 3399).—Very distinct from the others. Bulbs about the size of a Walnut; leaves longer than broad, and not cordate at the base, from 4 in. to 10 in. long. Flower-scopes about 1 ft. high, bearing from four to ten small flowers, little more than 1 in. long. This was also discovered and introduced by Allan Cunningham. He found it growing in dense somewhat humid woods of Araucaria on the banks of the Brisbane River, near Moreton Bay. W. B. Hemsley.

THE FRUIT GARDEN.

REMEDY FOR THE CODLING MOTH GRUB.



Grub of the Codling Moth (Tortrix pomona).

The well-known German pomologist, Dr. Edward Lucas, has recently called attention to a simple method of guarding against the ravages of that tiresome insect-plague, the caterpillar of the Apple or Codling Moth (Tortrix pomona). It is dependent for its success on the fact that the moth most frequently deposits her eggs between the leaves of the calyx, whence the grub afterwards commences its attack on the heart or pulpy portion of the Apple, and finally escapes by a hole made in the circumference. Observing this, it occurred to Mr. Krausz, of Stuttgart, the discoverer of the remedy, to try the effect of cutting off the calyx, quite low down at its base, as soon as the Apple should have attained the size of a Hazel or Walnut. The prominent situation of the calyx at that period of the fruit's growth greatly facilitates its removal, and in the case of some hundreds of Apples Mr. Krausz experimented on—several hundreds can be done in an hour—none appeared afterwards to be the least injuriously affected by the operation. In those instances in which the cutting slightly damaged the calyx-tube, the wound soon healed over and became covered with a yellowish-green, cork-like substance, the latter eventually closing the tube, and thus creating an impassable barrier for the insect. As regards the shape of the Apple, this is somewhat altered by the above treatment, so as to render the variety less easily distinguishable, but the slight diminution in length, resulting from its adoption, is more than compensated for by increased thickness, total absence of grub, and, consequently, generally finer appearance. For the purposes of comparison, a considerable portion of the fruit on each of the trees selected for experiment had been left in its natural state, and the Apples operated on were chosen quite at random, regardless of aspect or situation. Not even in the case of the Emperor Alexander, a sort particularly liable to rot on the tree, was there met with, however, amongst the calyxless Apples, a single unsound or grub-eaten specimen, and with reference to the fallen fruit under the different trees it was found to consist exclusively of such as had not been operated on. Naturally regarding his discovery as one of no slight importance to fruit-growers, Mr. Krausz sent a collection of Apples (to show the difference in their growth and appearance), one half with, the other half without, calyces, to an exhibition recently held at Cannstadt, in Würtemberg, and the remedy which he recommends is now likely to be thoroughly tested throughout the fruit-growing districts of Germany. T. S.

FIELD CULTURE OF HARDY FRUIT TREES.

(Continued from p. 456.)

Summer Pruning.—To form the crown quickly, summer pruning should be resorted to. The following are a few instances in which it should be adopted:—When the graft, or the head of the tree, if it has not been grafted on the head or at the height of the crown, is vigorous, and promises to greatly exceed the height at which the branches ought to begin, the top of the shoot ought to be pinched during the summer, in order to make it branch out, and so obtain what only could be obtained in the following winter. Whatever may be the method adopted for growing the future branches of the crown, care must be taken during the summer to keep the tree pretty even—for instance, if the branch (*c*, fig. 40) grow too upright, a stout stick should be placed between it and the stem, so as to throw it outward, whilst if, on the contrary, it happens to grow too horizontally, it must be made to grow more upright, by means of a wire attached to the stem (as shown at *b*, fig. 40).

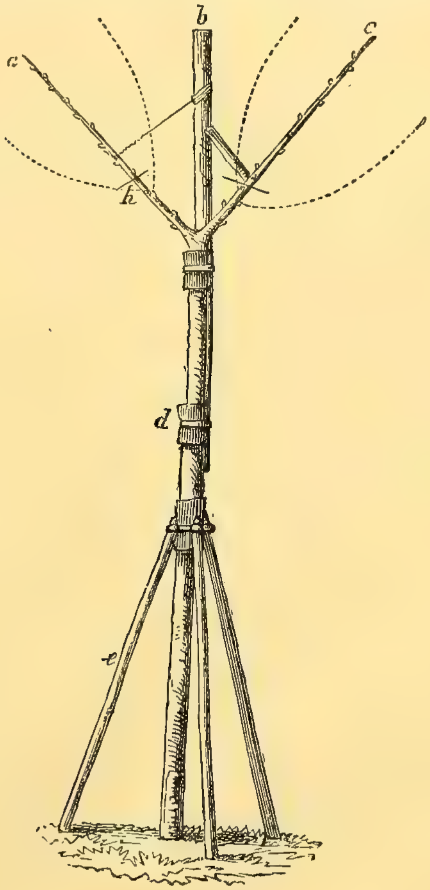


Fig. 40.

The fifth or sixth leaf which shows on the first shoot of the branches should be pinched off if the superfluous buds have not been destroyed at the winter pruning. We recommend the last plan to those who grow a large number of trees, as well as to those who are doubtful of being able to give as much attention as is necessary to the trees during the summer months.

Second Year.—The first woody branches are cut down to a length of about 1 ft. from their base on two opposite sides, so as to obtain forked branches, as shown at *b* (fig. 41). The system of pruning as shown at *a a a* (fig. 42) should also be adopted. A false application of the rule, according to which strong branches ought to be pruned short, and weak ones long, is often made during the second years' pruning.

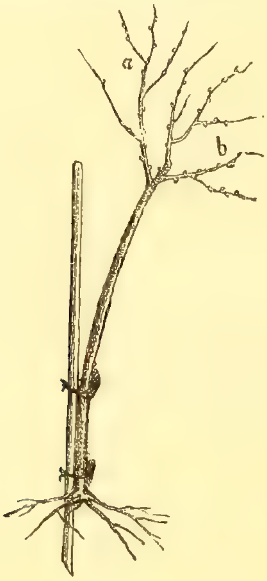


Fig. 41.

When a difference of vigour exists between the first year's branches (*a a a* fig. 42) they ought, nevertheless, to be pruned down to the given length of about 1 ft. The proper balance ought to be obtained by making a notch underneath the strongest branches, and a longitudinal incision, passing through the rind only, along the entire length of the weak ones. We may also, as pointed out in the directions for the first year's treatment, be careful to train the weaker branches in a more upright direction. During the summer following the second pruning, the shoots of the second year's branches (*b b b* fig. 42), bearing five or six leaves, must also be pinched off to make them woody.

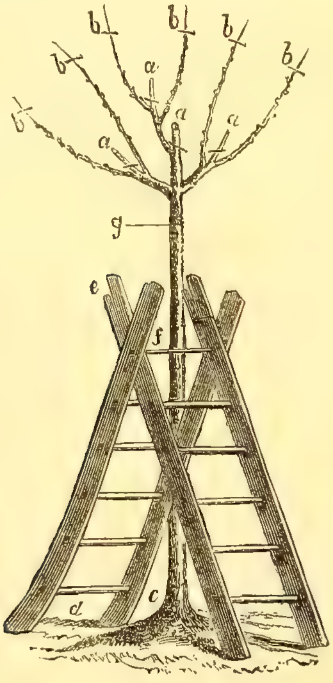


Fig. 42.

Third Year.—All trees which have not the requisite number of woody branches, say six or eight, should be pruned so as to form additional forks. The woody branches of the crown should be so trained that they form a hollow cup, as shown in fig. 42. When the woody branches are in sufficient number, and there arises no necessity for making them fork, they are cut down to three-quarters of their length, as shown in fig. 42, without paying any attention to their future growth. The crowns thus formed are imitations of the natural growth of the tree, and should be only adopted in the case of the Apple, Cherry, and Plum, whose crowns are flat and cup-shaped. The Nut, Mulberry, and Chestnut naturally form a ball-shaped crown without the need of much pruning. Little need be done with the pruning-knife, except to cut the graft down to three or four buds, after which they may be allowed to grow in their own way. Pears and Bigarreau Cherries, which have a natural tendency to form a conical crown, are trained in a pyramidal manner. In order to form such crowns it is necessary to allow only a single shoot to grow in its own way during the summer without being pruned. It should be shortened to 12 in. or 15 in. at the winter pruning, which should take place about the beginning of the year, the cut being made just above on the opposite side of the graft. By this means we obtain four or five lateral shoots, and one perpendicular stem. The upper shoots are pinched down during the summer, so as not to injure the lower shoots, which ought to be the stronger of the two. For the first three years the lower branches should be allowed to increase in length without making them forked. Every year the weakest parts should be pruned, taking care that the lower branches are always left longer than the upper. All crowding of the branches forming the crown should be avoided. This defect is not perceived at first, but it soon manifests itself, and is only to be remedied by gashing the tree without mercy. Pyramidal crowns especially require to have their branches properly distanced, in order that they may receive their proper share of light and air. The pruning operations of the next two years are confined to shortening the lateral shoots which are growing too luxuriantly on the woody branches, and to taking care that the branches grow with equal vigour and in the right direction.

Thinning the Crowns.—For some time after the formation of the principal branches, in fact, for three or four years, the crown ought to be thinned out so that light and air have free access to it. The weakest shoots should be chosen for pruning away, and watery shoots should be ruthlessly topped, as well as all hanging shoots, or those which interfere with the evenness and symmetrical form of the crown. When two shoots cross, the weaker should be cut away, or at any rate the one which is placed in the least convenient position. If they are both left to grow, they will rub together with the slightest breath of wind, and both will be sacrificed. In the case of stone fruit trees, in which the cut wood does not heal so easily, only the small, weak, and sickly branchlets should be pruned away. The other branches, more especially those which show a tendency to grow in a vertical direction, should be slightly shortened at pruning time in order that they may furnish new wood. In fact, the operation of pruning should be so carried on that there is never any necessity for cutting away the old wood except where it is dead. In certain parts of the country there is a very mischievous system of pruning fruit only once in seven or eight years, and then on a large scale. This is the cause of the decay of many of our old kinds of fruit trees, especially Apples and stone fruit trees. Pruners who practice this kind of work, which is apparantly but of little importance, should take the best advice on the subject that they can get, for pruning operations require a large amount of tact and skill. In any case they would be nearer the mark if they pruned away fewer branches than is their general habit, and if they thinned only the different parts of the crown with a little more moderation. If they follow out this advice they will find that they are no longer under the necessity of cutting away large branches, because they have ceased to bear at their base, or because they produce only a few feeble shoots. If it be necessary to prune somewhat severely, a winter following a prolific summer should be chosen for the operation. It is also preferable, when it can be done, to thin out towards the end of the year just as the leaves are beginning to fall, because the shape of the branches and general growth of the tree are more apparent. Good pruners who are afraid of cutting away too much are apt to err on the other side, for a leafless tree rarely seems to have too many branches. Although it results from what we have already said, that orchard trees do not need the continual attention that garden trees require, it does not mean that it is not necessary to visit well established orchard trees at least once a year armed with the proper tools, even when it is not advisable to prune regularly. A large number of irregularities always want looking after, and preventive measures require to be taken against future defects. Dead and decaying branches want cutting away, and Moss and caterpillars require destroying. The tools necessary for this purpose are the sécateur (fig. 43), the chisel or cleaner (fig. 44), the échenilloir (fig. 45), and the saw (fig. 46). The curved knife is but seldom used, except for small trees. It is best not to cut too deeply into the interior of the crown, and that only when there is absolute necessity for it. The inexperienced pruner should never be allowed to meddle with this part of the crown. Winter operations may be perfectly well performed with the *échenilloir*, which, when it is well made and properly sharpened, may be used for cutting branches of medium thickness. This instrument is quite indispensable to the orchardist. Small twigs and shoots which ought to be cut away entirely, may also be cut from below. In this category we include adventitious watery shoots, which grow accidentally below the crown, and thus deprive the other parts of the tree of their food. According to the thickness of the branches to be cut, we use either the curved portion of the chisel, or else the flat part, using a mallet from below in the former case.

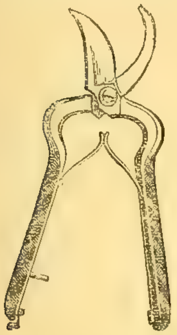


Fig. 43.

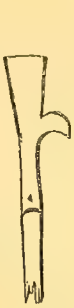


Fig. 44.

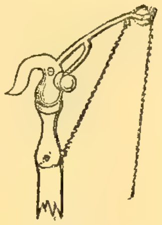


Fig. 45.

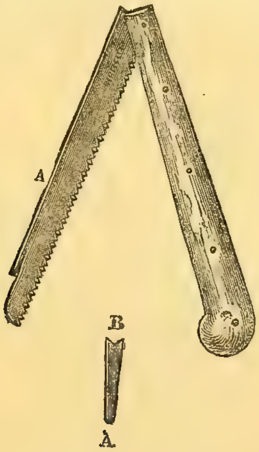


Fig. 46.

Treatment of Watery Shoots.—When a tree has attained an advanced age, and the sap circulates but feebly, widen the hardened bark. The decrepitude of the tree begins to show itself by the appearance of succulent shoots, which are rather the effect than the cause of approaching decay. These adventitious shoots first show themselves on the branches, which have been allowed to grow to a great length, or else on those which have been entirely abandoned. The whole of these watery shoots need not be pruned away. When the trees have, more or less, fallen into a state of decay, the branches are cut off a good deal farther back than the rottenness seems to extend, the fresh shoots on the living portion of the tree being properly pruned. A certain portion of the ordinary shoots should also be allowed to remain; as they will serve, in the future, to replace the old branches which have been cut away, as they spring exactly from those parts of the tree from which the decayed portions have been cut away. It requires, however, great skill on the part of the pruner to know how to make use of the young wood in order to replace the old. It is true that by this means we get a number of ugly stumpy branches, but they will not be long before they produce new ones, which will soon restore the beauty of the tree. The tree soon begins to wear a leafy appearance once more, and will produce abundantly throughout a long series of years, a result which we should not have obtained so speedily had we endeavoured to replace the old tree by a new one. By this system of severe pruning, we may greatly improve the appearance of trees which have grown deformed; those, for instance, whose pruning has been neglected during the first few years of their growth, and have mis-shaped crowns. This operation is required in a great number of orchards.

Pruning Large Transplanted Trees.—It is customary, when large trees have been planted in permanent positions for several years, to prune them severely, under the pretext of equalising their branches and roots—reciprocity, as it is called. It is an erroneous notion to prune the roots and branches in the same proportion. There ought certainly to be a certain proportion between the two, but this ought to be obtained by thinning judiciously. When the crown requires severe pruning, the operation ought to be postponed for a full year after transplanting; that is to say, until the following spring. The tree suffers greatly in any case, and when the roots and branches are both severely cut about, as is the usual custom, it frequently fails to recover from the shock.

Summer Pinching.—Trees growing in the open ground, like those in gardens, ought to be carefully looked after during the summer, more especially if it be desired to keep them in the very highest state of perfection. The operations necessary for this purpose consist in cutting away all useless shoots, and to pinch back those which are intended for branches, but which are growing too fast. When the tree is young, these operations may be performed from the ground, but when the branches are out of reach it is better to use a ladder.

Where there are many fruit trees, a double step ladder is necessary. Orchardists neglect a number of little operations by not using this useful adjunct to the orchard. The single ladder in unskilful hands will often cause more damage than will be repaid by the operations performed by its means. We understand, however, that small growers are afraid of the outlay necessary for procuring a good double step ladder, which is only used a few days in the year, and is generally in the way at other times. At fig. 42 we give an illustration of a set of steps which may be used either as a single or double step-ladder, the construction of which is neither more difficult or more expensive than that of the ordinary rung-ladder. If we wish to use it double it is folded in the middle, and if on the other hand we wish to use a single ladder, we lay it down on the ground and slide the two portions together. We have used this ladder for several years, and would advise all orchardists to provide themselves with one. As shown in the figure one part is narrower than the other, so that it fits exactly with the broader half. The top rung of the broader portion is an iron rod (*f*) which passes through the narrower half by means of a slit about 3 in. in length. At each end of the narrow half there is a notch which, when the ladder is stretched out to its full extent, clutches the last rung of the broader part. The instrument shown in fig. 47, which acts like an échenilloir, but with greater ease and precision, was invented by M. Aubert, a Paris cutler. It consists of a flat piece of steel which carries an immovable blade. This new tool, of which we give a cut (p. 476) which shows it in action, has not the defects of the old fashioned *échenilloir* when used for ordinary summer operations on account of the long arm of the lever being absent. It is more solid than the so-called *supprime échelle*; which has never been a favourite amongst cultivators or orchardists, as it only acts on tender shoots. The instrument in question, however, easily slices in two a woody twig as thick as a lead pencil, leaving a clean wound, *A* is a sharp cutting blade, which is a fixture; *b* is a movable cutting blade, which is pulled downwards towards the operator by the cord (*d*) and slides in a groove, and on a rod flying back to its proper position by means of a spiral spring when the cord is released. By means of a clip (*e*) and a thumb screw (*f*) it may be rapidly attached to or detached from the handle (*g*) at pleasure. This mode of adjustment ought to be applied to all instruments of this nature, which are usually fixed to the handle, such as *échenilloirs*, fruit gatherers, &c., and must consequently remain perpetually attached to their long handles, which makes them very inconvenient for stowage, to say nothing of the impossibility of using handles of different lengths. All the arguments brought forward in favour of the old-fashioned *supprime échelle* are equally applicable in the case of the instrument invented by M. Aubert; in fact, it places the whole tree, so to speak, within our reach, and may be used for pruning superfluous shoots, pinching off buds, destroying caterpillars and their habitations, thinning out the fruit and gathering it when ripe, doing away entirely with the use of ladders, double or single.

(To be continued).

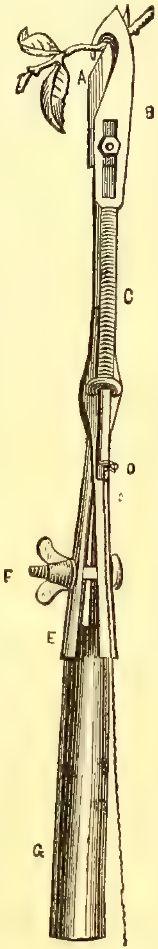


Fig. 47.

Fruit Stores and Frost. — When frost penetrates a fruit store, the flavour and keeping properties of fruit are destroyed; notwithstanding this, many fruit rooms are not built frost-proof. An ordinary iron stove or a hot-water pipe will, of course, keep out frost, but their incautious use often dries and heats the atmosphere too much, and does harm in that way. In small stores, one or two paraffine lamps lighted so as to burn during severe nights, will be both cheap and effectual; or, on sudden emergencies, candles might be made useful. I have known places in which stoves have been taken out and lamps substituted, with satisfactory results. Where gas is burned on the premises, that might be usefully employed.—H.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Top-dressing Vine Borders.—This is the best time for adding fresh soil to Vine borders. Secure a quantity of the best loam or soil obtainable. If in turves, cut it up into small pieces, add a quarter of its bulk of good manure; and, if ground bones cannot be had, add about the same quantity of wood ashes and charred refuse. Mix the whole up together twice over; then remove all the old surface from the border quite down to the roots. That done, the fresh material may be put on; apply a thin layer all over the surface first, and work it in with the hands amongst the roots; then the whole may be laid on. Unless the soil be very dry, it should not be trampled firm, but only gently pressed down. A substantial top-dressing of this kind is of far more permanent benefit than a layer of soft manure; and when properly done, it will last good for two or three years.—Cambrian.

The Heaviest Bunch of Black Grapes that has ever been grown, or, we should say, that has ever been recorded, is now on view at 22, South Frederick Street, Dublin. The variety is Gros Guillaume, and the grower, Mr. Roberts, gardener to the Countess of Charleville, Charleville Forest, Tullamore, King's Co. Its weight is 23 lb. 5 oz.; its length, 24 in.; and width across the shoulders, 22½ in.; and in point of colour, bloom, size of berries, and general finish, it is described as all that could be desired. This bunch stands third on the list of heaviest bunches (irrespective of colour), being 2 lb. 15 oz. less in weight than the bunch of Raisin de Calabre, 26 lb. 4 oz., shown by Mr. Curror at Edinburgh in September, 1875, and 2 lb. 5 oz. less than the White Nice, 25 lb. 15 oz., shown by Mr. Dickson, of Arkleton, at the same time and place.—"Gardeners' Chronicle."

THE GEOGRAPHICAL DISTRIBUTION OF PLANTS.

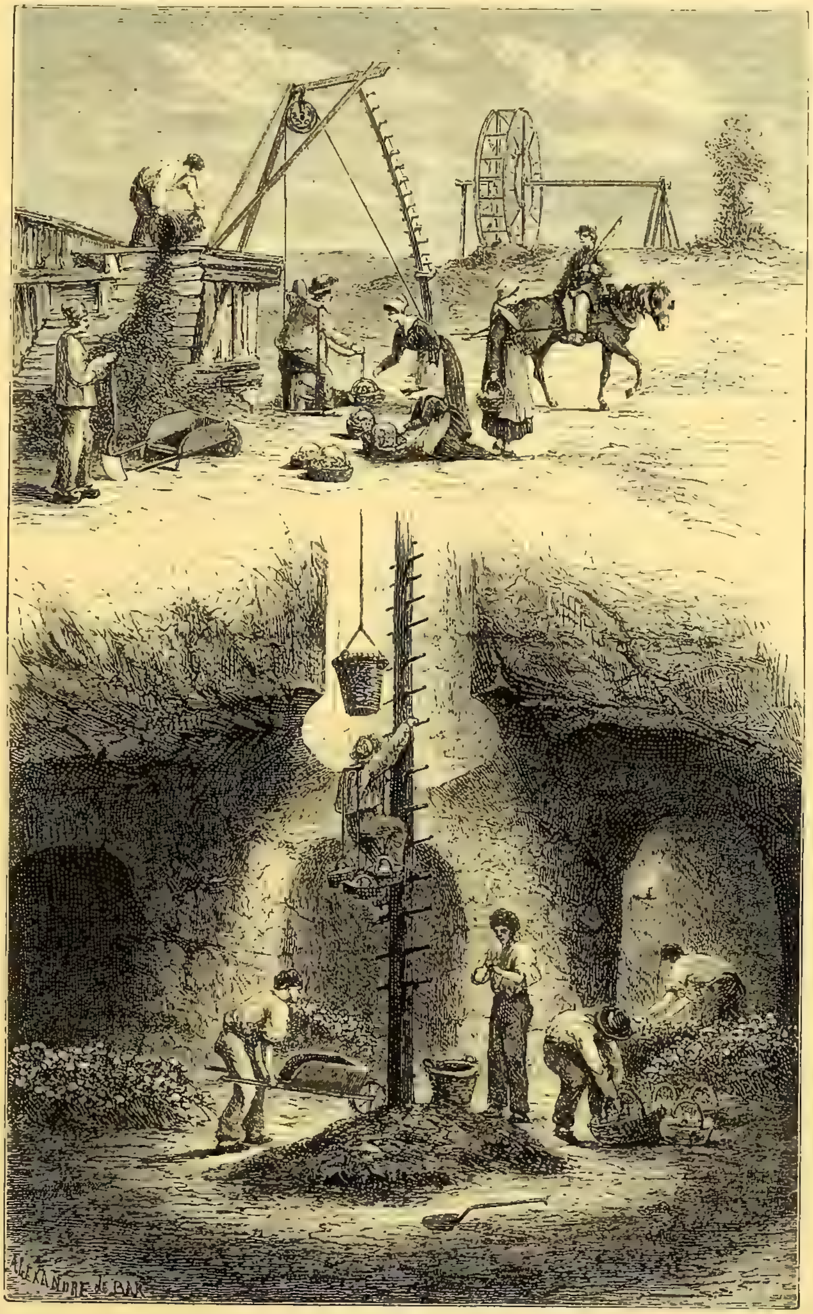
Introductory Remarks.

Importance of the Study.—A knowledge of the fundamental laws regulating and limiting the dispersion of plants over the surface of the earth is not merely of abstract interest; it is of great practical use, and is gradually increasing in importance as the natural sources of one valuable vegetable product after another become exhausted. To examine and discuss this subject in all its bearings would fill many thick volumes, and therefore it is necessary to confine our attention here mainly to those points which more immediately concern the cultivator. The principal aim of this brief sketch being to give prominence to useful facts connected with the present distribution of plants, a critical exposition of any particular theory does not fall within its scope, nevertheless it does not appear desirable to avoid all reference to anything and everything that cannot be supported by absolute proof. Indeed, it is almost impossible, in speaking of the agents known to be actively engaged at the present moment in altering the aspect of the vegetation of different countries and different regions, to exclude all speculations as to what these and other forces may have effected in byegone ages.

Evidence of Fossilized Plants.—We have the irrefragable testimony of the rocks that vegetation of a very simple type of structure existed in very remote ages, in a very early stage of the consolidation of this planet, co-evally with animal organisms of equally simple types. It is also beyond doubt that fossil plants and animals of a growing complexity of structure are found associated in successively more recent strata, until we reach the deposits of historic times, in which occur impressions of parts of plants identical with living forms. Comparatively so little of the globe now remains unexplored that it may be confidently asserted that an enormous number of distinct plant types, of the Coal Measures for instance, have become extinct, and are now replaced in the same countries by forms not only widely diverse in themselves, but likewise belonging for the greater part to totally different families. Another fact—many, and perhaps all, of the more ancient types known to us only in the fossil state had a very extensive geographical range.

Continual Change the Order of Nature.—How far these facts support the theory of evolution, or descent from one or several types, I shall not attempt to show, but they indicate at least that constant change is the order of nature. It may always be, and have been, gradual, and too slow for us to be able to appreciate; but it is none the less surely going on. Besides these changes in the character of the vegetation of the surface of the earth and the waters of the ocean, we know that the globe itself, both as to the land and water, has undergone great alterations. It will doubtless always be a matter of surmise how much, and what parts of the present seas, were dry land at any or different periods; but, on the other hand, there is no difficulty in finding traces of the sea or mighty rivers or lakes where now is dry land. According to geologists, since the deposition of the older strata of the Tertiary Epoch, the whole of the south-eastern portion of England, from Portsmouth to the Humber, has been covered by the sea; Wales has existed as an island, and Scotland and Ireland as clusters of small islands. Formerly the theory that the history of the world consisted of a number of distinct and separate epochs, each terminated by a universal catastrophe, was much in favour; but further research has brought evidence to light which indicates continuity and local changes; in some cases of a violent and sudden character, in others the reverse. This slight allusion to the vegetation of past ages is intended to lead up to a more correct estimation of the agents now active in modifying the physiognomy of nature.

Agents which have Effected the Present Distribution of Plants.—The principal factor in determining and limiting the flora of a country is now, and probably always has been, climate. Therefore, when it is intended to attempt the introduction and cultivation of any particular plant into another country than its own, as, for example, the Cinchona in India, the first thing to be considered and studied is the climate of the native country of the subject and of the country where the experiment is to be made. Should the country of the two places differ materially, there is little chance of success, and there is a great risk of total failure; and many such failures are on record, simply because the promoters of certain schemes of "acclimatisation," as they please to call it, have neglected or been ignorant of the fact that every plant, according to its constitution, requires a certain amount of heat to attain perfect development. It is true that some plants are much more elastic than others, and accommodate themselves to greater variations of climate. But man, as he has increased and spread over the world, has done much, as far as climate would permit, to alter the character of the aboriginal vegetation of most countries. The influence of man is of two kinds, active and passive; and he is to be distinguished from all strictly natural agents. Man's active influence is exercised in the introduction and cultivation of exotic plants; and among other ways in which he passively contributes to the changing of the flora of a country is the involuntary introduction of weeds. A fruitful source of destruction of the indigenous plants of several countries has been indirectly effected by man through the importation of hogs, goats, rabbits, and other animals. Among other agents which have assisted in widening the area of distribution of many plants are birds and various other herbivorous members of the animal kingdom, ocean currents, rivers, winds, violent gales, &c.; but all these agents are limited in their action by climate.



Sectional View, showing operations in Mushroom Cave at Montrouge at the time of gathering and of sending up and down the materials of beds. Drawn by A. De Bar in 1877.

Number of Species of Plants.—Independently of the lower Cryptogams, the number of known distinct species of plants in the whole world is estimated at from 100,000 to 120,000, according to the view taken as to what constitutes a species. Of course the number would be much larger if computed from the standpoint of a botanist like Mr. Jordan, who has divided the Whitlow Grass (Erophila verna) into seventy species, or from the standpoint of a florist, who regards slight differences as sufficient to warrant him in giving distinctive names. For some further information respecting the definition of species and varieties we may refer to the article on classification. These 100,000 to 120,000 species are referred to from 10,000 to 12,000 genera. But these genera vary very much in the number of species they embrace. Some few, such as Solanum and Erica, include several hundred species, whilst other equally distinct genera, such as Atropa, Deadly Nightshade, and Hippophaë (Sea Buckthorn) are each limited to one species. The genera are grouped under 200 to 250 Natural Orders, some of which comprise a large number of genera and species, whilst others include very few or even only one genus. Thus the Compositæ (Aster family) includes, at a very moderate estimate, 750 genera and 10,000 species, and the Leguminosæ (Pea family), 400 genera and 6500 species. On the other hand, the Ulmaceæ (Elm family) numbers only four genera and twenty species; and there are several Natural Orders that are not represented in our native flora, which are still more restricted.

Anomalies of Distribution.—Some of the Natural Orders have a relatively small geographical area, and others are represented in every country and region to which plants penetrate. Here again it is necessary to say that the lower Cryptogams, such as Sea-weeds, Mosses, and Funguses, are left out of the comparisons, as they are all through, except where specially mentioned. A familiar Order (the Bromeliaceæ, or Pine-apple family) is limited to tropical and temperate America, though several species have now become thoroughly naturalised in other countries. The Gramineæ (Grass family) is a striking example of a very natural group of plants, extending into nearly all climates and situations. Genera and species exhibit similar peculiarities in their distribution. The genus Eucalyptus (Gum trees of Australia) includes nearly 150 species, and is almost confined to the mainland of Australia, forming its largest and most valuable forests. Not a single species extends to New Zealand; and only three or four each, any of the islands north of Australia. In contrast to this the large, natural genus Rubus is found in the most distant and diverse countries—from the Arctic regions in the north, through all the continents southwards to New Zealand, Australia, South Africa, and South America; but in certain regions the species are much more numerous than in others. The genus Fagus (Beech trees) offers a remarkable instance of widely separated species. Altogether it comprises less than twenty species, which are divided between the temperate regions of the northern and southern hemispheres. In the north they belt the world, and in the south they are found in South America, New Zealand, Tasmania, and South Australia, forming considerable forests in some parts, especially New Zealand; and F. Moorei is a beautiful tree 150 ft. high, forming dense forests in the mountains of New South Wales. The great Water Lily (Victoria Regia) is confined in a wild state to some of the rivers of equatorial America, whilst an allied aquatic (Brasenia peltata) occurs in America, the East Indies, Australia, and tropical Africa. Many familiar genera are dispersed over nearly all tropical and sub-tropical countries. To this category belong Abutilon, Acacia, &c., whilst Clematis, Ranunculus, Trichomanes, &c., occur in nearly all temperate and sub-tropical regions, and Ranunculus extends to the coldest countries in which flowering plants have been found. Generally speaking, aquatic plants and Ferns have the widest areas of distribution. Aquatic plants are less exposed to the effects of atmospheric changes, and they are also subject to being carried to great distances by the element in which they grow. Our common Pondweed (Potamogeton natans), to give an example, is almost ubiquitous, as is also the common Duckweed (Lemna minor); and Trichomanes radicans occurs in Europe, Africa, Asia, America, and Polynesian Islands. Similar curiosities of the distribution of plants might be multiplied indefinitely, but enough have been adduced to show that types are not necessarily characteristic of certain climates. Rubus arcticus is at home in the coldest regions, and R. rosæfolius is a native of the tropics, so that under cultivation these two closely-related plants would require totally different treatment. This brings us to the consideration of climate. For purposes of comparison, and as a starting point, the climate of Great Britain will serve as a basis, just as the indigenous and cultivated plants of this country will be employed for illustration in all cases where it is possible.

Climate in its Effects on Vegetation.

Constitution of Plants.—Given a favourable soil, certain climatal conditions are necessary to enable plants to grow and reproduce themselves. The absence of a sufficient amount of heat and moisture, or the presence of too much, according to the constitution of a plant, will determine its fate. Practically speaking, plants do not alter as to the amount of heat and moisture they require, and years of cultivation effect nothing in the way of reducing or increasing the amount that will suffice. The foliage of the Scarlet Runner, Bean, and the Potato is destroyed by a slight frost now as in former days, and these plants are no more acclimatised, in the sense of being able to endure a greater degree of cold, than they were a year or two after their introduction. These are instances in which cold, that is, a temperature below the freezing point, influences successful cultivation. Should they escape frost there is normally sufficient heat in the climate of London, for example, for them to attain perfection. Take the Grape Vine for another illustration. It bears our severest winters without injury, but it rarely matures its fruit, because the amount of heat is inadequate. Heat, it may be observed, as the word is employed here, signifies a temperature above the freezing point. Too little heat and too much cold act in an equally prejudical manner; but they are very unequal opponents to grapple with in practical gardening. We cannot supply the missing amount of heat except, of course, under entirely artificial conditions, though we can avoid the too great cold, in the case of such plants as yield their crop the same season, by planting at a seasonable time. Plants in different stages or conditions of their development are less susceptible to cold, or are naturally protected from it.

Seeds will Bear Great Extremes of Temperature.—In the dormant stage, in the seed, the plant will bear much greater extremes of temperature without injury than at any other phase of its existence; consequently, annuals that would be killed by a few degrees of cold when actively growing, escape annihilation through their immunity to cold in a certain condition. And, as in obedience to another law, their seeds do not germinate in a medium which is below a temperature, varying in amount for diverse plants, they avoid, to a great extent, exposing themselves to an unfavourable influence. Protected in this way, annuals are able to attain maturity and reproduce themselves in a climate of less heat than that of their native country. Herbaceous perennials, which annually die down to the ground, or shrubs like Fuchsia macrostemon, which may be treated as such, escape the full force of the cold, and flower and produce good seed in due season. But there is no compensating a deficiency of heat, and unless a plant suffering under this disadvantage is able to propagate itself asexually, it must die out if left to take its chance. Unusually late or severe frosts often blast our native plants, and the character of the vegetation of any country undergoing a gradual change of climate must in time become quite metamorphosed. Alternate changes of climate would account for the character of the vegetation of this and other countries, of which we have evidence in the fossil forms of plants; and also affords an easy and an acceptable explanation of the distribution of existing forms of the vegetable kingdom. This view is now generally accepted, and the evidence in support of it is almost irresistible; but it would occupy too much space to enter into details on this point. The gradual disappearance of one set of plants, enfeebled by unfavourable climatic changes, and overcome by the increased vigour and reproductive power of another set of plants, is a picture easily conceived. Thus, many of our common weeds, introduced into the Australian and New Zealand settlements, have developed an extraordinary degree of vigour, and spread with astonishing rapidity, taking complete possession of the soil, to the exclusion of the native plants. The common Water-cress was introduced into New Zealand, where it soon attained 8 ft. or 9 ft. in length, with stems as thick as one's wrist, choking the streams, and even impeding navigation in the rivers. Timothy Grass (Phleum pratense), introduced into California, there attains a height of 5 ft. or 6 ft., with a flower-spike nearly 1 ft. in length, and yields a crop of hay equal to 4 tons per acre. Gradually, however, it seems, introduced plants of this kind return to a more normal state, and are reduced to even terms with others of the same duration.

The Same Species not Created in Different Parts of the World.—It is true that to accept this theory of change of climate in its full significance involves the acceptance of the corollary, that all forms have been dispersed from a single centre; that is to say, dissimilar forms have been created in different centres, but the same form was not created, or did not originate, in two or more diverse centres. Of course, this would not preclude the possibility of the same form, in distant habitats, developing different lines of variation, or the converse. The last sentence presents some apparent contradictions, which would require much explanation and illustration to elucidate. At the present time such British plants as Sanicula europæa, Scabiosa succisa, Galium aparine, Limosella aquatica, Sibthorpia europæa, Luzula campestris, and many others, independently of their distribution in Europe and Asia, &c., occur in the isolated mountains of tropical Africa. Although in this situation they are widely distant from the nearest habitats of the same species, it is assumed that they owe their existence in all the localities where they abound, not to separate creations, but to climatal changes that have destroyed them in the intervening plains, and driven them, or permitted their extension to the mountain heights, where they find a suitable climate. It is almost superfluous to add that the distribution of heat depends upon altitude as well as latitude. In equatorial countries, where there are lofty mountains, it is possible, by ascending, to pass successively through belts of tropical, sub-tropical, temperate, and Alpine forms of vegetation in a few days at the outside. Each 1000 ft. of altitude is equal to a journey of something like 200 miles in latitude. The decrease of temperature for elevation, even within the tropics, will vary considerably, according to the situation, aspect, &c., of the mountains.

How Plants may have Migrated.—Supposing in the course of time the earth's course with respect to the sun should be so changed that the climate in the latitude of these mountains of Africa would become a temperate or cold one, the tropical plants of the plains would disappear where the climate was getting colder, and the temperate plants of the mountains would descend to the plains and only extend and propagate in the direction of the most suitable climate. A gradual return of heat would bring about a restoration of the former conditions, or similar conditions. Such changes, it is believed, have actually occurred during the existence of the world. Whether this is a correct interpretation of the present distribution of plants is, however, from a practical point of view, a matter of secondary importance. What concerns us more nearly is the present distribution of plants and the actual climatal conditions. W. B. Hemsley.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

November 19.—Tying in Raspberry canes to wire trellises. Getting the remainder of the Strawberries for forcing stacked up in ashes against north wall, so that they may be easily protected in severe weather. Turning over Mushroom-manure to sweeten. Commencing to clear out an old Vine border, wheeling the mould on to vegetable quarters. Used to sow at this date Sutton's Early Ringleader and Maclean's Little Gem Peas, but find it much better to sow them in pieces of turf, 1 ft. by 6 in., about the middle of January under shelter.

Nov. 20.—Looking over Calceolaria cuttings, and picking off all flower buds and leaves that are damping off. Getting early borders well manured and trenched from 2 ft. to 3 ft. deep. Planting Peach, Nectarine, and Apricot trees in holes previously prepared for them. Getting manure on to all vacant ground whilst the weather is favourable, and clearing out all useless and decayed vegetables.

Nov. 21.—Potting another batch of Lily of the Valley. Covering up Endive and Lettuces to blanch. Taking up the drainage of Vine border and relaying it. Getting home new maiden loam from the deer park for new Vine border. Clearing off flower borders and getting them forked up. Planting the following sorts of pyramid Pears in well-trenched ground—Williams' Bon Chrétien, Jargonelle, Gratioli of Jersey, Louise Bonne of Jersey, Dunmore, Beurré de Capiaumont, Broom Park, Marie Louise, Doyenné du Comice, Beurré Diel, Ne Plus Meuris, and Knight's Monarch.

Nov. 22.—Earthing up French Beans and putting sticks to them. Pruning and nailing Cherries on north walls. Getting up a few roots of Rhubarb and putting them in Mushroom-house for forcing. Getting all the boiler flues and chimneys cleaned out. Making new Vine border with loam from deer park, with ½ in. bone, old mortar rubbish, and a little charcoal added.

Nov. 23.—Potting 100 pots of French Beans; also Cucumber plants. Taking up Asparagus for forcing, and filling a three-light frame. Mulching all newly-planted trees. Clearing up leaves in pleasure grounds, and getting all gravel rolled down firmly. Looking over Cauliflowers, turning down leaves for protection where required. Looking over the Pines, and giving them a little water where required.

Nov. 24.—Potting up Mint; also a little Tarragon for forcing. Moving tender plants from cold pits to Vineries. Looking over fruit-room, and removing all fruits that are decaying. Looking over the Grapes in bottles, taking out any bad berries, and filling up the bottles where required. Clearing up the rubbish yard, and burning all refuse for ashes. Fruit in use for dessert—Pines, Grapes, Pears, Apples, Medlars, and Nuts.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Trees Suitable for Screens.—One of the first conditions that most people desire in a garden is privacy; whether the garden be that usually attached to a small villa residence, or of a more pretentious character, one of the first things ordinarily looked to is the planting of the boundary lines to, as far as possible, exclude the sight from outside except at such points as it is desirable to leave open to afford views from the interior of objects more or less in the distance, as local circumstances may determine. In the case of large places, this is easily managed where there is sufficient room to introduce a belt of deciduous and evergreen trees, which should be skilfully arranged so as to effect the object without making the intention more than can be avoided apparent; but with amateurs' gardens of an ordinary size, there is more difficulty in making an effectual screen without its occupying too much land. Erect-growing Poplars, from the limited space which they cover, and their rapidity of growth, are most frequently used, yet these are unsatisfactory, inasmuch as divisional lines of this sort should be as impervious to the eye during winter as they are in summer, a condition which cannot exist when deciduous subjects are used. Much better every way, both by their ability to thoroughly answer the purpose in view winter and summer alike, as well as thriving well in most soils and situations where not exposed to too smoky an atmosphere, are such things as Pinus cembra, Pinus austraiaca, evergreen Oaks, and Hollies; these, by a judicious arrangement in not planting them in exactly straight lines, with a few dwarfer-growing subjects in front, such as Rhododendrons, Portugal Laurels, and Aucubas, will make an effectual screen in a short time if the plants be sufficiently attended to, and the soil fairly enriched. It is a prevalent, though very mistaken idea, that such plants as these do not like an enriched soil in which to grow; this, however, is anything but the case. Green, rank manures do not suit them, but a fair admixture of that which is well decomposed stimulates their growth amazingly. In the case of all plants required for screens, it should ever be borne in mind that they must always have enough space to keep the lower branches in a healthy, thriving state, otherwise they get naked below, which completely defeats the object in view. With trees so grown for such a purpose, a moderate use of the pruning knife is admissable, in order to prevent their unduly encroaching upon each other, and to encourage and direct growth where it is most required. Not only is the boundary line of a garden, composed of evergreen subjects like the above, much more effectual for the purpose intended, but it has the additional advantage of looking well at all seasons, and affords much more protection to everything requiring shelter during the winter and spring, at which time it is most needed, than can possibly be effected by trees and shrubs that cast their leaves.

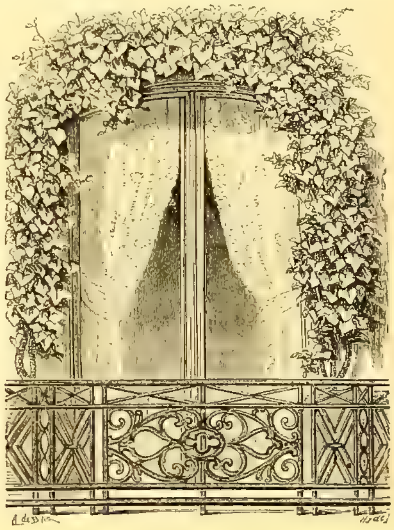
Planting.—Now that the season has arrived for planting many things for both use and ornament, such as fruit trees, Roses, and other deciduous as well as evergreen shrubs and trees, I would especially caution amateurs against a very mischievous practice that is often recommended, and too often acted upon. It is this, when the natural soil is not of a character well suited to the trees that have to be grown in it, it is a common practice to dig holes to a considerable depth, and to fill these in with what is termed suitable soil; this often takes place where the ground is naturally of a clayey and retentive description; in such soils, holes like those just alluded to are made for fruit trees against walls, by the sides of walks, and in open quarters; standard Roses have similar stations prepared for them by the sides of walks, and in other situations where their presence is deemed desirable; under such conditions as the above, the soil used for planting in will naturally be considerably lighter in character, more open and porous than the surrounding earth, the inevitable result of which is that the holes so dug and filled in with this lighter material at once become receptacles into which the water of both the surface and the surrounding ground drains, reducing the newly-put in material to a state of saturation, in which the roots of the trees and shrubs so planted stand through the winter as in a cold bath; the extremities more or less broken in the operation of removal, at once absorb the superabundant moisture rotting back to a considerable extent, and entailing disappointment more or less. In all cases where planting is being done the whole of the ground if possible, should be dug, trenched, or, what is termed sometimes, bastard-trenched, that is, the upper surface, to a greater or less depth, according to the good or indifferent nature of the land, turned over, and that underneath stirred, but not brought to the top, fully as deep or a little deeper than the deepest holes which have to be made to admit the plants; by loosening the whole body of earth to such a depth, it will easily be seen that the water collectively has a chance of passing away, without obstruction, into the drains, which land of such a character will not do without. Where, as in planting Roses, in prepared stations such as above, when the surrounding ground is often lawn, and digging in the way described would be out of the question, or in planting fruit trees or anything else, where the places the roots are to occupy are prepared in the way first named, in every case a drain of some description should be laid from the bottom of the hole so dug out, which will carry the water off into one of the ordinary drains in the place; if this simple but indispensable precaution were taken, a good deal of the disappointment that results from planting trees in exceptional situations would be avoided. It will be easily seen that where the land is naturally of a too light character for the growth of the subjects intended to be planted, and the stations are opened and filled with soil of a stronger and heavier description, the mischief above spoken of will not occur, as the open character of the ground admits of the superfluous water passing off.

Shrubberies, Lawns, Walks, &c.—As soon as the leaves are all fallen, attention should be given to making a general clearance so as to get everything into a tidy condition for the winter. In the case of leaves the most natural course undoubtedly, with a view to returning to the soil that which has been extracted from it, is to allow them to rot on the ground where they fall, as frequently advised by those who treat on the subject; but in gardens of small or moderate extent, where anything like a neat appearance is required, this is out of the question, as every gust of wind blows them out from under the shrubs and trees on to the walks and lawns; and in small gardens, where the soil is of an average description, the deciduous trees will generally grow even too fast without any manurial assistance, either in the shape of the leaves they have produced or otherwise; consequently, the best course to follow is to gather them up and bury them just at the extremities of the roots of evergreen shrubs, on which they will have a most beneficial effect; but, before this is done, enough should always be secured for laying up to rot to furnish leaf-mould for potting purposes, and also for mixing with stable manure for hotbed work in winter and spring. After the shrubberies are cleared, the lawns should be well swept and rolled, and in the case of any that have been recently made, where the Grass is generally disposed to grow luxuriantly, advantage should be taken of a few dry days to go over them again with the machine; this will be the more necessary after the present exceptionally fine autumn, which has kept the Grass growing longer than usual. On old lawns, on the contrary, where the Grass generally grows weak, and is liable to suffer through drought in summer, it is well not to mow more in autumn than is necessary for appearance sake, and in such cases never to cut the Grass too close, as the shorter it is cut the weaker it gets. Walks should be again gone over, and every bit of weed picked out; common Grasses, that spring up on the gravel, always give the most trouble on walks, and amateurs who have not had much experience in gardening often take very little notice of these, especially at this season, when they are small; but they should never be neglected, as being British plants of the hardiest kind, they will go on seeding at all times, except in the very depth of winter. Keep the walks well rolled, so as to present a clean, even, firm surface. When everything in a garden is neat and orderly it goes far to compensate for the lack of flowers. Those portions of the garden devoted to decorative purposes should again be looked over, to see where any additional bulbs can be planted with good effect. Few places are met with, large or small, where a sufficient number of the earliest of these flowering plants are grown, such as Snowdrops, Crocuses, Early Tulips, Aconites, Erythroniums, Daffodils, Narcissi, Hyacinths, and Crown Imperials. The advantage arising from these plants being grown in quantities enough to produce an effect, is that they make the garden interesting and cheerful in appearance from the first dawn of the lengthening days, and their absence can never be compensated for by any amount of summer-flowering subjects.

Kitchen Garden.—A slight hotbed should now be made up for growing Seakale, where this is wanted by the end of the year. If it is made of leaves alone all the better, as these are not liable to get too hot, in the way that stable manure frequently does; make it about 2 ft. 6 in. in thickness; it may be soiled at once, and the crowns put in 6 in. apart. Any ordinary garden soil, or old potting material, will do, keeping it fairly moist but not too wet. A small garden frame will answer to place on the top, covering it with boards or shutters, so as to keep the inside quite dark, which is better than using the glazed lights, as it would be necessary to put over them mats or litter, which in a wet state naturally cause decay.

Flower Culture in Algeria.—In a land like Algeria, where every bit of turf becomes a parterre after the rains of December and January, we naturally look for sweet smells rivalling the fragrancy of field and meadows, nor are we disappointed. Vast tracts in the Metidja, consisting of thousands of acres, have been turned into flower-gardens, and the harvest they yield, being less exposed to risk than any other, is exceedingly productive. The marketable value of flowers used in distilleries, laboratories, &c., may be gathered from the following prices given per quintet (cwt.): Borage fetches 300 francs; Mallows, 300 francs; Verbena, 400 francs; the little pink Centaury, 60 to 80 francs, &c. The most esteemed of Algerian perfumes are made from the Orange tree, Tuberose, Jasmine, Verbena, and other well-known flowers rarely seen to perfection under colder northern skies. No traveller should omit to visit these flower farms, gorgeous tracts of unimagined brilliance flecking the brown plain, oases of colour between the monotonous mellow sky and the transparent blue of the sea and mountains. A few years ago this feature, as well as many another now characteristic of Algerian scenery, was wanting. The highly-cultivated farms, Vineyards, and orchards, the bran-new villages that have sprung up in every direction, and above all the plantations of Eucalyptus globulus or Australian Blue Gum, are changing the whole face of the country. —"Fraser's Magazine."

Ivy on High Windows.—In cities where there may be little opportunity of planting the Ivy in the street, it is easily grown as a box plant. The window framed in Ivy, as shown imperfectly in the accompanying sketch, was a very high one (four stories), and the effect was very good indeed. A deep, strong box, filled with very rich soil (in which the manure is well rotted before being used) suits these window Ivies best.



Epiphyllums at Chatsworth.—We hear that these precious winter-flowering plants are in great beauty at Chatsworth, where Mr. Speed has wisely got many of the varieties well grown—large plants, and plants in baskets. This last is an excellent way, as it permits of the under parts of the drooping flowers being well seen.

Violets by Post.—Mr. Groom has sent us, from Henham Hall, a tin box full of Violets and other flowers, to show how well they travel by post packed amongst a few of their own leaves, and when they reached us they were as fresh and fragrant as Violets just gathered. As regards the boxes, their size and form were fully described at p. 388; any tinsmith can make them. They are 6 in. long, 2½ in. wide, and 2 in. deep. Such boxes, for a few stamps, will carry several dozens of Violets.

Zonal Pelargoniums in the Greenhouse in Autumn.—The various newer forms of Zonal Pelargoniums are now very attractively in bloom at Chiswick. The various shades of rose, salmon, and the eyed kinds are among the most attractive, and there is one beautiful white kind—Evening Star. The beauty of these plants must astonish those only familiar with the older kinds. They make the greenhouse gay as a flower garden in November. Grown in this way we see some of the charms of the Zonal Geranium. Making telegraph lines of it through the land was the way to rob it of its beauty.

TREES AND SHRUBS.

THE TULIP TREE.

(LIRIODENDRON TULIPIFERUM.)

THIS highly-ornamental deciduous tree belongs to the same Natural Order as the Magnolia. It is indigenous in North America, chiefly in the Western States, where it attains large dimensions, particularly so in deep alluvial soils on the banks of rivers, where, it is said, there are specimens from 120 ft. to 130 ft. high, with stems girthing at 5 ft. above the ground from 18 ft. to 22 ft. It was introduced into this country as far back as 1688, but it appears from Evelyn's 1776 edition of "Silva," that many years after it was cultivated in England it was considered to be not hardy enough to stand out in the open ground during winter. Evelyn says: "The first tree of this kind which flowered here was in the gardens of the late Earl of Peterborough, at Parson's Green, near Fulham, where it was planted in a wilderness among other trees; before this was planted in the open air, the few plants which were then in English gardens were kept in pots, and housed in winter, supposing they were too tender to live out of doors; but this tree, soon after it was placed in the open ground, convinced cultivators of their mistake by the great progress which it made, while those which were kept in pots and tubs increased slowly in growth; so that afterward there were many others planted in the open ground, and these are now large in size, especially those which were planted in moist soil." Since the above was written, this tree has been pretty generally planted, though perhaps in limited numbers, throughout the country, mostly in parks and pleasure-grounds, on account of the ornamental aspect which it presents amongst other trees, especially when sufficient room is allowed it in which to develop its branches, and where it is fully exposed to the sun. In such situations it produces its conspicuous cup-shaped, or rather Tulip-like flowers, in abundance, on the ends of the shoots; the colours of the flowers are orange, yellow, and red, and when contrasted with the smooth, highly-polished green foliage, they produce a striking effect—

> ———Through the verdant maze
> The Tulip tree
> Its golden chalice oft triumphantly displays.

The flowers, which are slightly scented, are generally fully open about the latter end of June or the beginning of July; its large saddle-shaped leaves, which are lucid green above and pale green underneath, hang on the tree until late in the year, when, during a dry autumn, they die off a deep rich yellow. The ramification of the branches, too, of the Tulip tree is very distinct from that of most other trees, the outline being of an unusually graceful character. The habit of the tree is upright, but the limbs are inclined to make many bends and elbows, and the branchlets, particularly those on the lower branches, are pendent. In short, taking the Tulip tree as a whole, it is one of the most stately and ornamental trees which we possess.

As a timber tree it is not likely to be held in much esteem in a commercial point of view. Its wood is white, clean-grained, soft, and easy to work, but it is not durable when exposed to alternate moisture and dryness; it is also rather brittle or "short-grained," and deficient in toughness and strength of fibre; this latter fault is very evident in growing trees, the limbs of which are liable to be broken off by rough winds; on this account young-growing Tulip trees should receive timely foreshortening as regards any straggling branches, or those that are gaining too much strength in proportion to the rest of the tree. The Tulip tree is specially adapted for planting in smoky towns, and for adorning parks and squares, on account of its large, distinct, fresh green leaves, that hang on so late in autumn, as well as the rich appearance which they exhibit when changed to deep yellow before they fall. There are many large and fine specimens of this tree growing in different parts of the country. Perhaps, therefore, some of the readers of THE GARDEN who possess, or know of, examples of remarkable dimensions will kindly record them in your columns; such information could not fail to be interesting to all lovers of trees. There are several large and majestic Tulip trees growing at Longleat; the two largest containing respectively 160 ft. and 210 ft. of timber, and girthing 10 ft. and 10 ft. 10 in. at 5 ft. above the base; of these trees the former has a fine, round, solid butt, 15 ft. long, where it divides into three straight, upright stems, each quite a timber tree in itself, and the ends of the branches droop gracefully, a habit peculiar to this tree, which adds much to its beauty; it is close upon 100 ft. high. The last-named specimen is about 85 ft. high, and its butt is 10 ft. long, up to where it diverges into five main upright branches, and forms a fine, ample head of foliage, which just now (October 26) is a beautiful golden colour. The appearance of these trees in their brilliant yellow autumn clothing is a sight not to be easily erased from the memory. At Zeal's House, Wilts, about 5 miles from here, there is growing on the lawn in the flower-garden a Tulip tree even larger and finer than those which I have mentioned. It is the best specimen with which I am acquainted, and I should think there is scarcely its match for size of butt, and beauty of form and outline, in this country. The butt is 6 ft. long up to where it divides into several huge, handsome limbs; the smallest part of the butt girths 13 ft. 4 in.; the diameter of the spread of the branches is about 70 ft., and the height of the tree is fully 60 ft. When I saw it recently, its wide, oblong head of broken and irregular outline was a mass of healthy, fresh green foliage, the branchlets on the lower limbs hanging vertically, and almost sweeping the turf.

As a proof how hardy the Tulip tree is, I may mention that the situation where this specimen is standing is very exposed, being on an elevated, open piece of ground at the foot of Mere Downs, a breezy part of the country, and quite destitute of shelter as far as the eye can reach from the site occupied by this splendid tree. The soil in which it is growing is thin and light, with a green-sand subsoil. The Longleat Tulip trees are growing in a strong loamy soil, on an Oxford clay subsoil. These two instances of the Tulip tree flourishing equally well in strong and light soils is good evidence in its favour as regards more general planting where ornamental effect is the primary object required. GEORGE BERRY.

Longleat.

EUROPEAN TIMBER.

THE real area capable of producing valuable wood in Austro-Hungary amounts to something above 9,270,000 hectares (about 19,000,000 English acres). This area is decreasing, though in some provinces it does so in a small proportion and gradually. On an average 31 per cent. of the surface of the country has remained under the cultivation of trees, and in some of the provinces more than 50 per cent. of the whole surface is devoted to forests. Provided, however, that care be taken to replenish all the area of the forest in different gradations from the youngest to the oldest trees, it may be stated without exaggeration that an annual increase of 32,000,000 "test cubic metres" (the official and usual measure) may be reckoned upon. This does not include the wood that may be made use of in the intervals of clearing, nor of the quantity of wood kept as stock. The means for transporting timber are so insufficiently developed in Eastern Gallicia, the Bukowina, and, owing to their inaccessibility, the upper regions of the Alps, that the forests in these places have remained in all their pristine grandeur and luxuriance, and are still unavailable. The country produces Pine, Larch, Fir, Beech, Oak, Elm, Willow, and Poplar; and the export trade averages about 67,400,000 cubic metres decennially. The forests of Hesse Darmstadt and Baden cover about 594,975 English acres, leaving only 162,145 acres for agrarian purposes. There are besides about 9797 acres of wood belonging to Hesse in Prussian and Bavarian territories, which swell the total area of land covered by woods to 604,772 acres—in other words, four-fifths of the Grand Duchy are wooded. In Baden, the forest-covered land occupies an area of 1,268,956 English acres, which is equivalent to one-third of the whole Grand Duchy. There is no appreciable decrease here, as every thirty years the land which has once belonged to the cultivation of trees must return to its original employment. The forests contain some of the finest timber in Europe, and consist of Pines, Oaks, Firs, &c. The various provinces of Prussia produce timber as follows:—

Province of Prussia.—Pine, Larch, Beech, Oak, Norway Maple, Sycamore, Elm, Alder, Birch, Sallow, Linden, Ash, and Aspen. Pine wood comprises three-fourths of the total extent of forest in this province.

Province of Posen.—Pine, Oak, Birch, Beech, Alder, Elm, Maple, Aspen, and Hornbeam.

Province of Pomerania.—Pine, Oak, Birch, Beech, Alder, Larch Elm, Maple, Hornbeam, Aspen, Linden, and Hazel.

Province of Silesia.—Pine, Pitch Fir, Oak, Alder, Birch, and Beech.

Province of Brandenburgh.—Pine, Oak, Beech, Birch, Ash, Elm, and Maple.

Province of Saxony.—Alder, Birch, Oak, Elm, Maple, Beech, Hornbeam, Hazel, Yew, Pine, and Pitch Fir.

Province of Westphalia.—Alder, Beech, Oak, Elm, Maple, Birch, Pine, Ash, and Larch.

Rhine Province.—Beech, Oak, Pine, Larch, Hornbeam, White Alder, and Pitch Fir.

Hohenzollern.—Fir, Pine, Oak, Aspen, Birch, Alder, Sallow, and Beech.

Schleswig-Holstein.—Beech, Oak, Hornbeam, Maple, Poplar, Hazel, Pine, and Larch.

Province of Hanover.—Beech, Oak, Pine, Fir, Larch, Maple, Ash, Elm, Hornbeam, Birch, Alder, and Yew.

Province of Hesse-Nassau.—Beech, Fir, Oak, Maple, Elm, Birch, Aspen, Sallow, Hazel, Hornbeam, Alder, Larch, and Yew.

Respecting the recently-annexed provinces of Alsace-Lorraine, we have no available statistics. Exclusive of these, the forest land covers 23 per cent. of the whole area of the kingdom; 70 per cent. of the total annual produce of the entire country is hardwood, of which one-fifth is timber and 30 per cent. firewood stumps, roots, and brushwood. Probably in no country is greater care taken of forests than in Germany. Strict precautions are taken to prevent anywhere a greater area being cleared than is annually replanted. Most large forests are mapped out according to their size and the age and quality of the trees; a section being annually felled and an equal area replanted. The timber trees of Saxony are similar to those of Prussia, and the whole forest area covers about 1,163,000 English acres. There is a general tendency to diminution arising from the forest land being constantly thrown into cultivation by small proprietors, and about one-third of the forests and woodlands belong to the State. Competent authorities give 1,000,000 cubic ft. as the quantity cut in all Saxony every year, and the amount is not considered to be excessive. Wurtemberg may be generally divided into five distinct natural timber-producing districts, following the geological and climatic conditions of the kingdom. They consist of—(1) the Pinewood districts of the Saxt Circle; (2) the hardwood district of the Unterland; (3) the Pinewood district of the Black Forest; (4) the hardwood district of the Swabian All; (5) the Pinewood district of Upper Swabia. In the Pinewood districts the Spruce and the Silver Fir largely predominate, although Scotch Fir is to be found, chiefly on southern slopes, mostly in conjunction with Spruce, and sometimes separately. In the hardwood districts the Beech, interspersed more or less with Oak, furnishes the bulk of the growth. Of other trees there are the small Beech, Ash, Maple, Elm, Birch, Alder, Lime, and various kinds of Willows. Wurtemberg has a superficial area of 4,819,675 English acres, of which 30·6 per cent. are forest lands. The area of timber-producing lands is rather on the increase than diminishing, and between 1861 to 1873 there was an increase of about 10,000 acres. As might be supposed, the State exercises a vigilant control over the forests, and neglects no opportunity of increasing its forest property by the purchase of contiguous lands, so that any general diminution arising from clearances elsewhere is more than counterbalanced.

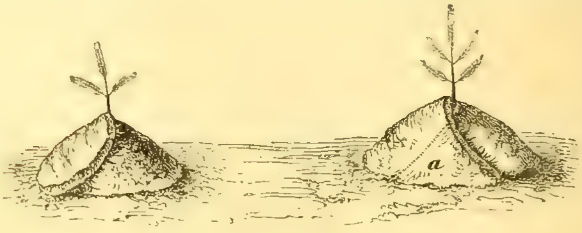
As nearly as can be ascertained, the extent of timber-producing forests and lands in Sweden (exclusive of Lapland, which has never been surveyed) is 3190$\frac{3}{4}$ geographical square miles, or about 30,000,000 acres, being 42·8 per cent. of the whole area of the country. It can hardly be said that the actual area of timber-producing forests is diminishing to any great extent, since comparatively small quantities of forest land are being brought under cultivation. The same cannot, however, be said of its productive power, which is rapidly getting smaller. The Red Pine or Scotch Fir, and the White or Spruce Fir, form the staple of the forests—the greater portion of which are situated in the northern and central provinces. They also produce Oak, Beech, Birch, Aspen, Elm, and Lime. The timber and deals exported to this country are of Red and White Pine. Birch only attains a small size, and is chiefly used for firewood. Aspen is used for making matches, which industry is one of the most flourishing in the country. Sweden exports her timber to almost every country in the world; perhaps China and Japan are the only exceptions. Great Britain consumes the most, and then come France, Germany, Holland, Denmark, and Belgium. Very stringent forest laws are now enforced, the good effects of which cannot be seen before the lapse of some years, but there can be no doubt of their ultimately effecting a marked improvement in the yield of the forests.

The total area of forest-producing land in Norway is computed at 66,000 square kilometres, but in this survey considerable so-called timber-producing lands consist of comparatively unproductive rocks, swamps, and moors. The Pine and Fir, even more than in Sweden, constitute the riches of the Norwegian forests. The Scotch Fir is found up to the most northern latitudes, and grows there up to a height of 3400 ft. above the sea-level. The Spruce Fir ceases near the Arctic Circle. The forests are principally situated in the east of Norway, near Christiana, Hamar, Trondhjem, and Christiansand. Those of Bergen have long since been exhausted. In the western districts of the country forests can hardly be said to exist. As in Sweden, strict forest laws are now in force, but the mischief done by indiscriminate felling will take a long time to repair. In Messrs. Churchill and Sims' circular of the 5th June, they remark—"So few deals now come from Norway that there can be no longer said to be a trade in them." Battens and prepared floor boards from the principal export, and wood, 9 in. wide or upwards, cannot be supplied as formerly.

The forests of Russia are, in several respects, an important feature of the country, as a physical characteristic, in a commercial point of view, and supplying fuel in a country only recently found to possess coal. Forest economy is now being more attended to, and young Russians are constantly sent to study forestry in the German and French colleges devoted to that science. The brushwood, covering a vast extent of forest land, consists almost entirely of the Hazel, Dwarf Birch, Alder, Willow, and Juniper. There are many conjectures as to the result to the timber trade, should unhappily any misunderstanding arise between England and Russia. Prices of Russian deals have already advanced; but in all probability, any further serious rise would only drive builders to use cheaper wood, which, with the contracted building operations such a calamity as war might bring about, would make us more independent of Russian supplies than some are willing to admit.—"Building News."

PLANTING TREES ON MOUNDS.

In comparison with other methods of tree planting, this is remarkable for the manner in which it has succeeded in soil where young trees do not strike root readily when first transplanted. As a rule, trees with spreading roots are preferable for this kind of planting, the tap roots being cut off before planting. The soil of which these mounds consist must be of the best quality, and prepared, the autumn before it is required, as follows:—By means of a strong hoe, the turf is taken off a piece of ground and placed on the side; the soil is then thoroughly worked and thrown into a mound, all roots or other injurious matter being removed. A part of the turf which was taken off is shaken to pieces, and placed on the first layer of soil; over this is laid another layer of good earth, and so on until the mound reaches a height of 8$\frac{1}{2}$ ft. A small excavation is then made at the top of the mound, in which all the refuse is burnt, and the ashes are mixed with the soil. This affords sufficient mould to furnish 500 or 600 mounds. When prepared in this way, the composition requires no further manipulation before being formed into the round and pointed mounds on which the trees are placed. When these are planted, the mounds are covered over with two layers of turf, the upper part or grassy sides facing each other.—"Journal of the Farm."



Tree-planting on mounds.

[These mounds, as shown in the annexed woodcut, seem to me to present an unsightly, and, at the same time, an unnatural appearance. The method is altogether unnecessary as far as success in planting is concerned, although it may with advantage be carried out on a modified scale on naturally wet, stiff, clay soils; on dry, light soils, mounds are wholly unnecessary, particularly such abrupt, high mounds as those represented in the woodcut, which would be detrimental rather than otherwise by encouraging the evaporation of moisture from the roots, which, probably, during an extremely dry, burning summer, would suffer so much from drought that the trees would be found to die outright. There is no better plan for planting ornamental trees and shrubs than turning the soil and subsoil to a depth of at least from 18 in. to 24 in., and a yard or two more in diameter than is required for the roots when planting, turning out stones, roots, on very bad subsoil, and replacing them by fresh soil or turf, well chopped up and stirred in with the original soil, On stiff clay lands inclined to be wet, the trees should be planted on the surface, covering the roots with fresh soil so as to form a slightly raised mound over the roots, and outside or beyond the latter, not less than a yard or so. The method of surface-dressing trees every few years with turf, leaf-mould, or other enriching material and gradually forming easy mounds, is preferable to the system indicated by the annexed woodcuts.—G. B.]

PINUS BOURSIERI.

(SYN. P. CONTORTA).

This dwarf-growing, hardy tree seldom attains a height of more than 20 ft., even in favourable situations. Its leaves, which are stout, are from $1\frac{3}{4}$ in. to 2 in. long, and mostly in twos. The branches are much twisted, and long in proportion to the height of the tree; indeed, in habit the latter is very irregular, assuming more of the scrub than the tree form, and of no value in the shape of timber. It was discovered by M. Boursier on the north-west coast or North America. It somewhat resembles Pinus Banksiana, but is scarcely so bushy in habit, and its leaves are a shade lighter in colour. It is shown off to best advantage when planted on a rough bank, or it would be in character if associated with natural rocky sites in pleasure grounds. As an isolated specimen on a lawn it presents a mean scrubby appearance, and is scarcely worthy of a place even in a Pinetum except as a curiosity. G. B.

Pinus Boursieri.

Escallonia macrantha in Nottinghamshire.—This is one of the best evergreen shrubs which we have for planting against terrace walls having a south or west aspect. It grows freely in loam mixed with a little sand. When in good health, the foliage is of a bright and cheerful tint of green; and now, when in flower, it is very effective and useful for cutting purposes. E. Ingrami is another good variety; both are quite hardy here, having stood unprotected for six years.—A. H., *Thoresby.*

THE KITCHEN GARDEN.

MUSHROOMS IN WINTER AND SPRING.

Although Mushrooms form valuable additions to our list of kitchen garden productions at all seasons, they are exceptionally welcome from October to May. I doubt, however, if there be not more failures in their culture than in that of any other esculent grown—and these chiefly from kindness rather than from lack of attention. The routine which we adopt with general success is very simple and varies little from that generally followed, viz.:—Sufficient fresh stable manure is shaken out from the longest litter to make one good large bed. It is carted into a heap, and about one load of fresh turfy soil is added to four of manure; this is turned over two or three times, at intervals of a couple of days, to prevent violent heating, and if very dry and likely to become mouldy, sufficient water is added to ensure a general sweet temperature throughout the heap. When fit for making into a bed it should be about 85° or 90°, and neither wet nor dry, but moist. We make up our beds in dark sheds or cellars, where a close, warm atmosphere, not easily affected by external temperature, is maintained at an average of 60°. Fire heat should be applied with caution, as it is too drying, and when fresh successional beds are in course of formation, the genial warmth given off by them is far more congenial than fire heat. We make the beds from 15 in. to 18 in. deep, and tread them firmly in order that the heat may be gentle and lasting; after a few days the spawn is inserted in pieces about the size of a hen's egg, 1 ft. apart, just covering it with the manure. Upon the quality of the spawn success depends; if good and fresh, there will be abundance of Mushrooms; if bad, there will be few or none, however well the bed may be made or treated; therefore the spawn should be obtained from a trustworthy source. Use it fresh, or store it in some perfectly dry, airy position until it is required. The beds should be earthed with good fresh loam, beaten down as solid as a spade can make it, and in a month or six weeks the Mushrooms will begin to make their appearance. In gathering, they should be pulled or twisted at the base, so as not to disturb the successional crop. When the beds appear to be dry, a good soaking of weak liquid manure, at the same temperature as that of the house, will assist the development of later crops; but as soon as the produce is not sufficient to be worth gathering, the most economical plan is to remove the old bed and make a fresh one in its place. J. Groom.

Henham.

THE TWO BEST POTATOES.

Having to grow about $2\frac{1}{2}$ eacres of Potatoes to keep up a good supply, I have always been anxious to prove the qualities of any new and good sort which has been from time to time sent out. Last year I grew upwards of forty sorts, and in November, 1871, I exhibited a collection at South Kensington of upwards of fifty kinds. This year I have grown as a main crop only four sorts, namely, Lapstone, Fortyfold, Regents, and Paterson's Victoria. The disease set in fully a month earlier than usual this year, and by the middle of July the leaves of the Lapstones were all black and dead; the other three sorts, although close by, suffered much less, the foliage of these being still green, although much spotted, when lifted in the second week in August. The Lapstones, which are generally of first-rate excellence, are this year scarcely second-rate in quality; the Fortyfolds are good, as are also the Regents, the former being the whiter of the two. We peel, steam, and dry off both sorts, and then they are too mealy to be taken up by a fork. The Victoria is not first-rate, but being a late sort, it may be better in spring. Brownell's Beauty, which did so well with us last year in the field, is this year a comparative failure, owing to its weakly growth. The ground was prepared for it by being thrown up into 3 ft. ridges, steel forks being employed for the purpose, and then it was well worked down just before planting time with drags, roller, and Colman's cultivator, thus being got into a fine tilth. The Potatoes were ploughed in 6 in. deep and 3 ft. apart. Just before they were up, on a fine day, a pair of light harrows were drawn over the surface, and killed all small weeds then coming up. About July 20, Grey Stone Turnips were sown between the drills, which were not earthed up, and now there is a fine piece of Turnips to be fed off by sheep, preparatory for Potato culture next year. Although we had many diseased, I have a better store of Potatoes this year than last, as the crop was much heavier. What I wish to show is that after having for many years tried most of the sorts in cultivation, I have come to the conclusion that there are no two better kinds for general purposes and good quality than the Fortyfold and York Regent. The Red Skin Flourball I grew in 1871, but have never grown it since, as I did not consider it good enough for table, and the American Rose is never satisfactory with me; I am told that its quality is best when grown on poor dry soil.

Killerton, Exeter JOHN GARLAND.

Precautions against Slugs, Snails, and Worms.—When putting out young plants in showery weather, some sifted ashes scattered over the surface of the beds will make travelling most uncomfortable for any soft-skinned vermin. Lime and soot are also distasteful to them, but the first shower not only neutralises their effect, but they have a tendency to clog up the pores, so to speak, of the surface-soil; sifted ashes, on the contrary, keep the surface loose and friable, and attract and absorb what little warmth there is in the sun's rays at this season. A very light sprinkling is sufficient, and the effect is permanent. Some object to the use of ashes, but for heavy soils their application in the way just described is very beneficial, and, what is more, they can be obtained in most places for almost nothing.—E. H.

The Late Pea Season.—Carter's First Crop was the earliest Pea here this season, coming in about eight days before William the First. Carter's Improved Sangster's No. 1 has been with me this year an excellent early variety and a good cropper. A new early Pea, marked Carter's No. 100, has been sent to me for trial by that firm, and has proved to be one of the best varieties which I have ever grown; it only grows about 3 ft. high, and becomes covered with pods of a good size, and the Peas are excellent as regards flavour. Another dwarf new early Pea, sent to me by the Messrs. Suttons', has likewise proved a desirable kind for growing in pots or for early market purposes. Carter's Early Premier Gem has proved likewise to be one of the very best for forcing in pots, and than this and Multum in Parvo a better selection could not be grown for that purpose. Of the main crop varieties of Peas, or second earlies, the Hundredfold, or Cook's Favourite, has shown itself to be a great bearer, and to those not liking the sugary flavour of some Peas this variety will suit them. Advancer is still one of the best, both as regards fine flavour and productiveness; Fillbasket is another blue Pea, with very large and well-filled pods, and valuable for exhibition purposes. Of the general, or late varieties of Peas, the following selection, which I have grown this year, will be found to be a good one:—Turner's Dr. McLean is a wonderful bearer, an improved Veitch's Perfection, which is saying a great deal for it as regards productiveness; Veitch's Perfection is, however, still one of the best late Peas for keeping up the supply till the frost cuts them down; G. F. Wilson is after the same type, but a week earlier in coming into use than Perfection; Carter's Commander-in-Chief is a wrinkled marrow with curved pods, containing Peas of exquisite flavour. Very few varieties of late Peas can excel Ne Plus Ultra, either for productiveness or flavour, and, next to Omega, it is one of the latest bearing varieties. A new variety of late Pea has been sent me by Messrs. Carter, under the name of Culverwell's Telegraph, and it is certainly one of the largest podders with which I am acquainted, and they are of a fine shape for exhibition purposes; it grows from 4 ft. to 5 ft. in height, is a great bearer, and the Peas are excellent in flavour.—W. TILLERY, *Welbeck.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

James's Intermediate Carrot.—I have just taken up, from a piece of ground measuring 4 poles 22 yards, 24 cwt of Carrots, which, as regards quantity and quality, are all that one can desire; many of them are 15 in. in circumference.—RICHARD NISBET, *Aswarby Park, Folkingham.*

St. John's-day Cabbage.—It is suggested (see p. 458) that somebody will probably take up and re-christen the valuable Cabbage known in catalogues as St. John's-day Dwarf; but allow me to say that we have already got names enough; what we want are distinct forms to represent the names. Besides, who would change the present name of this valuable little Cabbage—indeed, the most valuable of all for spring sowing, and the least valuable for autumn sowing? St. John's-day Dwarf Cabbage and Winningstadt are the two most valuable Cabbages which we have for spring sowing, but somehow or other they have never become favourites with English cultivators.—P. B.

—— I know of no Cabbage to equal the St. John's-day in flavour and richness. I have grown it many years, having received it when first distributed by the Royal Horticultural Society, and I hope never to be without it. If planted 1 ft. apart, each way, it forms good heads, and is more productive than some of the larger kinds.—W. DIVERS, *Wierton, Maidstone.*

STANDS OF GROWING PLANTS.

JUST now, when one cannot always obtain as large a supply of cut flowers as may be necessary for the decoration of sitting-rooms, pretty arrangements can be made by means of flowering and fine-foliaged plants, grouped in baskets or stands. This style of floral decoration has an advantage over that of cut flowers, as of course I need hardly say the growing plants remain much longer in a fresh condition. The baskets in which the plants are arranged may be of any shape, according to the taste of the decorator; for standing on a small drawing-room table a long-shaped basket, with a handle across, looks very well; then, again, some can be obtained almost in the form of a March vase, except that the upper tazza is supported on a tripod in place of a straight stem. Some pretty plant stands on a larger scale can be obtained almost in the style of a small circular basket work-table; indeed, I have seen an old work-table of this description utilized before now, as I shall explain further on. In all baskets in which growing plants are arranged, there should be loose linings or cases of zinc. I know it is a common custom to line the receptacles only with Moss, but this I do not approve of, as the wicker-work soon becomes decayed with the damp, and also the soil and wet comes through when the plants are watered. Many baskets for this purpose are painted white, with a good deal of gilding about them; to the white paint I do not object, as it does not interfere with the tints of the plants, and it also preserves the wicker-work; but I do not admire the gilt. When the white becomes soiled it may receive a coat of black, or dark brown varnish. As I have just stated, there should always be moveable zinc trays in the baskets, and then, when the plants require to be watered, the tray-case can be lifted out on to a window-ledge, or some similar place, and left there till the moisture has drained through the holes, of which there should always be some, in the bottom of the tray. Over the bottom should be laid a layer of finely-broken crocks; the plants should then be turned out of their pots and set in the tray, the spaces between them being filled in with Moss, such as grows in woods or on old banks, or such as may be obtained for a penny a bundle at any nursery; the greenest should be placed at the top and neatly arranged, so as to look as if it were growing. The basket work-table, which I have mentioned as being converted into a flower-stand, was done as follows:—A zinc tray, such as I have described, was fitted to the size of the top, and to hide the sides of the pan a piece of flexible rustic edging was employed, such as one often sees used along the edges of conservatory stages to hide the pots, and which can be bought by the yard or foot, according to what length may be required. As to the different varieties of plants for arranging as I have described, these, of course, must depend on what the decorator has at command; but I should recommend that they be well hardened off before being used, as if brought out of a stove or warm greenhouse direct into the dry atmosphere of a sitting-room, they are sure to flag. Plants with succulent leaves can be made to retain their freshness much longer than they otherwise would do by being sponged over two or three times a week, and Ferns should be lightly sprinkled with water. I have seen pretty little baskets filled with hardy Ferns, and a spray of small-leaved Ivy twined round the handle has a most pleasing effect. Such an arrangement as this will look healthy for months, and is well adapted for dark rooms in towns, where other plants would only retain their freshness for a very short time. ANNIE HASSARD.

The Redwood (Sequoia sempervirens) **as Underwood.**—Mr. Berry (see p. 437) has done good service in bringing this tree so prominently into notice. I have long thought that it would do well in Ireland, where the climate is so favourable to its growth, and it is a matter to be regretted that so little of it is planted in that country. This Sequoia, Pinus insignis, and Cupressus macrocarpa all assume a robust character in Ireland, and, where seen there, are forest trees of great beauty. Allow me to supplement Mr. Berry's remarks by recommending the Redwood for planting as underwood where it would not succeed as a tree. There is no other evergreen that is so fertile as regards suckers when planted as a bush; the shoots, too, are very tough, and could be turned to profitable account in various ways.—CHARLES MCDONALD, *Garden House, Stokesley, Kent.*

No. 314.] SATURDAY, NOVEMBER 24, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

A JAPANESE GARDEN.

So much curiosity now-a-days is excited when the mere name of Japan is mentioned, that perhaps a few notes from one who has lately been there may be interesting. For my own part, while greatly charmed with Japan and its people, thinking the country most beautiful, and the people most artistic, I cannot give much praise to their gardening. A Japanese garden is invariably extremely small—in fact, the court-yard of the house, the ground plan of a Japanese house resembling very nearly that of a Pompeian villa. It is artistic as a whole, but flowers play only a subordinate part in it; often they are only in pots, or, rather, china vases. There is invariably a pool of water at one end, or in the centre, edged with rock-work, so as to prevent any hard line, and this is of the most fantastic shape, with Japanese Ferns, such as Lastrea erythrosora, and various Davallias planted in conspicuous places on rocky islands or peninsulas. On one side, the rockwork will certainly rise steeply, and it will be planted with rose, red, and white Azaleas. Many of these were in full bloom when I was there, but in no case was the quality of the flower remarkable, judged by a European standard; but what is remarkable is the skill displayed in pruning out all vigorous growth, so as to keep the bushes small, and to send all the strength into flowering wood, and the extremely prolonged season of flowering. In early June, there were many varieties only just showing colour in the bud, while next might be a bush that had finished flowering three weeks before, and many were in full beauty. Our European varieties so greatly exceed the Japanese Azaleas in size and beauty of bloom, that the only step we can take now seems to me in the direction of prolonging the season of their bloom. Sometimes they are trained into fantastic shapes, but this is not very usual. In the most open and sunny part there is a Cycas revoluta, with many trunks, some branched, and 8 ft. or 10 ft. high; and in some more shady corner, overhanging the water, which reflects the blue of the sky, is a Chamærops Fortunei, heavily laden with its yellow panicles of bloom; this is almost invariable in its position, and near it will be some Japanese Maple, pruned yearly, as the Japanese can, so as never to out-grow its neighbour. Its colour is exquisite, and varies, according to the variety, from deep red, through all shades of rose, to primrose-yellow and apple-green. The beauty of the colour of these Maples has often been mentioned; but it must be understood that, in order to have a long continuance of colour, the bushes must be kept constantly growing, for the fully-grown leaves soon get dull, and do not resume their beauty till autumn has laid his fiery finger on them. The Japanese Podocarpus is also a necessary inmate of a typical garden. This assumes a most ancient aspect under the skilled hand of the cultivator, or is pruned so closely as to resemble an Araucaria in effect. The season for pruning all shrubs and Conifers in Japan is just as growth is first pushing, so that Nature may heal the wounds at once. Bushes of Olea fragrans are also indispensable, and they generally suffer much torture at the hands of the pruner. If one side be not enclosed, there will be a hedge of Camellias, which is headed back from time to time, and which grows with a vigour rarely seen in England. If there be any flowers that do not come under the heading of shrubs, they are usually in china pots or flat pans, and consist of Chrysanthemums not more than 1 ft. high, and yet in flower at this season (June), brown tasselled or yellow Japanese varieties being those amenable to the treatment to which they must have been subjected. Lilies, such as L. longiflorum, umbellatum, and cordifolium (which latter I do not think worth growing where there is room for its "double," giganteum), and varieties of Dianthus chinensis were also in pots at the edge of the verandah, running round the house and enclosing the garden. Add to all this a rustic flight of steps leading to the top of the rockwork, where, if there be room, will be a stone-carved lantern, with paper sides, formerly used to burn pastilles or gold and silver paper for Buddha; a Pine tree, most cleverly trained over a trellis so as to give a sunny shade, and a few Aralia bushes and lilac Azaleas that may have intruded themselves, and you have a Japanese garden. The skill of a Japanese gardener consists in keeping everything in its place, allowing nothing to be smothered, nothing to get "leggy"; but when you seek for cultivated flowers, or artificial garden varieties, you will be disappointed. Nature has given them so many beautiful flowering plants and shrubs that they are content to take what she gives; but should she originate a variety, they will then dig it up and take care of it.

E. H. W.

PROFITABLE GARDENING.

A staple topic for speeches at horticultural dinners and similar gatherings is the capability of the country to produce sufficient fruits and vegetables to meet the demand for such productions. It is easy to quote statistics, to show that so many thousands of pounds are annually paid to foreigners for garden produce, and to assert that we ought to save that outlay by growing more fruits and vegetable at home; but sufficient account is not taken of the cost of land, labour, manure, and of other difficulties under which cultivators in this country labour, but especially of the uncertain climate under which the cultivation of fruits and vegetables has to be conducted It may perhaps by-and-by be shown that during the present year many tons of hardy fruits have been imported; would-be economists will, therefore, at once rush to the conclusion that more fruit trees—Apples, Pears, Plums, and Cherries, for instance—ought to be planted; but no deduction could be more absurd. For two seasons, but especially during the present one, we have had only the most meagre crops of fruit, owing to the severity of the spring months, when the trees were in bloom. Thousands of acres of fruit trees had scarcely a fruit upon them, and this defect no amount of planting could remove. If all the fruit orchards of this country had produced good crops of the fruits just named, there would have been a glut in the market, and much valuable fruit would, for lack of a profitable sale, have been spoiled. Fruit culture in this country will only henceforth be embarked in as a speculation, and, therefore, if for two or three years in succession—through no fault of the cultivator, but rather in spite of him—his orchards fail to produce fair crops, what encouragement is found for the investment of capital in such a doubtful direction? In regard to the importation of vegetables, it should be remembered that this has arisen through free trade; by the removal of obstructive duties, the foreigner has been enabled to compete favourably with home growers. Are we any the worse for this competition and for the enormous importations which are now made to this country? Looked at from a narrow point of view, it might be assumed that the sending of so many thousand pounds in money out of the country for vegetable products is a loss to us; but that need not be the result. What does the foreigner take in return? How much of the money thus paid to him is reinvested in the purchase of our manufactured goods? In all that relates to the produce of the soil, the seller only parts with his productions in order that he may become a purchaser of something else which he needs. Another point worthy the attention of those who so strongly advocate a wider cultivation of vegetables is, the undoubted fact that much of what is imported is sent to us at a time when similar vegetables are not in season in this country. Early Peas, Beans, Potatoes, and many other things are imported here long before such vegetables are ready for market with us, and then it is assumed that we have, in paying the cost of them, been expending money that we should have kept at home. Thanks to foreign growers, our season for obtaining vegetables and fruits is now largely extended; in fact, such is the demand for foreign produce amongst the higher classes at home, that our central markets are now seldom without imported vegetables, most of which could only be grown here at such a cost as to place them out of the reach of all but the most wealthy. How often have our home growers to say that foreign importations are keeping down the

market; of course they are, and for the obvious reason that the cost of production abroad is much cheaper than with us. We have heard of fabulous sums being paid per acre for market garden land in the Channel Islands, but £20 per acre there is probably, after all, cheaper than from £8 to £10 in Middlesex, where the growing period of the year is limited to a few months, whilst in the Channel Islands it is almost perpetual summer. Vegetable culture, to be profitable, can only be carried on within easy reach of a good market and a plentiful supply of manure; but land in any thickly-populated locality is dear, and not easily obtained. Rates, too, are very high, and these, with taxes and tithes, fall heavily upon the tenant of market garden land, for, singular to say, the more a tenant or owner improves the productive power of his land, the more heavily the local assessors make him pay to the local rates. Labour is, with such cultivators, also a formidable expense; good help can only be obtained at great cost; and when to all these drawbacks are added the immense difficulties under which cultivators labour through the vicissitudes of climate, it will be seen that fruit and vegetable culture is with us by no means all swimming with the stream. Economists may be assured that as fast as it is found that an extended cultivation of fruits and vegetables will pay, so fast, and only so, will more capital be invested in market gardening.
A. D.

NOTES FROM KEW.

MICROCACHRYS TETRAGONA, in the Winter Garden, presents many points of interest, not only to the skilled botanist, but also to the far greater class who admire a pretty plant simply because it is pretty, and do not trouble themselves much about its rarity, nor yet about any structural peculiarity which it may present. This remarkable Conifer comes from Tasmania, and is, perhaps, as rare in cultivation as it is in its native country, where it is confined to a few peaks of the Western Range, and to Mount Lapeyrouse. The Kew plant is a female one about 2 ft. high, its brilliantly-coloured cones being extremely handsome. These cones are produced in great abundance, and make so good an effect that we feel sure that the species would be a great favourite for the winter decoration of the cool conservatory. The scales of the cones are pulpy, semi-transparent, and of a very bright colour (characters not exhibited by any other Conifer known to science). Protea mellifera and Banksia Cunninghami—two widely dissimilar members of that very extensive and most variable of Natural Orders, Proteaceæ—are also in flower.

In the pleasure grounds, in a long bed near the Winter Garden, is a bush, about 9 ft. high, of the Groundsel Tree of the United States (Baccharis halimifolia). Although the flower-heads themselves are small, there are many of them, and the involucral bracts, tinged with red, combine with the lightness of the panicles to render them pleasing enough for a place in the table bouquet. Besides the merit of flowering in the open air at such a dull season of the year, the shrub has very pretty foliage, and will interest those who, judging from the British flora alone, have always regarded the Natural Order Compositæ as made up entirely of herbaceous annuals and perennials. Dahlia imperialis, a coloured plate of which appeared in THE GARDEN for Oct. 13, is in flower in the Palm House. Cassia Tora, a dwarf species, and C. viminea, a much taller one, are somewhat conspicuous on account of their bright yellow flowers; a decoction of the leaves of the former is used in India as a specific for ringworm. A pretty little bushy Convolvulaceous plant, Evolvulus arbuscula, is covered with its charming blue flowers. All the species of this genus bear very handsome flowers, and, for the most part, are easy of cultivation. The Brazilian Clavija macrophylla has bare, rod-like stems crowned with fine heads of large coriaceous leaves, from below which, on the old wood, spring a considerable number of racemes of orange-yellow flowers.

In the old Lily House is a very fine specimen of Arundo mauritanica, a fine Grass with many stems (10 ft. or 12 ft. high) surmounted by large panicles of flowers. Where grown under favourable conditions as to space, moisture, &c., this makes a very fine object. Osmanthus fragrans, in the Economic House, has little white flowers, which emit a wonderful scent. This plant is much valued by the Chinese, who, it is said, use the flowers for perfuming the higher class teas. Any ordinary greenhouse treatment suits it. The large, orange flowers of Linum trigynum, and the orange-scarlet of Aphelandra aurantiaca, are very showy in the stove. A beautiful Eranthemum, E. aspersum, nearly allied to E. tuberculatum, has a long, slender, corolla-tube; the limb is white, curiously speckled with purple, the middle lower lobe being nearly all purple. This species is a native of the Solomon Islands, and was first collected by Mr. John Veitch during his Australian voyage. Itambé is the varietal name given by Van Houtte to one of his Nægelias sent out last year; it has fine green foliage and very large yellow and vermilion flowers. N. Incendie has white corollas, finely spotted with fiery-red. Cyrtodeira fulgida is a dwarf New Grenadan Gesnerad, with very bright red flowers and dark green, bullate leaves, inclining to coppery in a young state; this species has been in bloom for some months. A Brazilian Malvaceous plant, Pavonia Wioti, introduced to cultivation three years ago by Makoy, of Liège, has a dull purple corolla and bright blue anthers, the great beauty of the plant being, however, in the very numerous bracteoles which compose the epicalyx; these are of a fine red, long, narrow, and ciliated; the leaves are long and strongly toothed; the flowers borne in sub-terminal corymbs, and a strong specimen is hardly ever out of bloom. A very beautiful Chilian evergreen shrub, Azara integrifolia, is at the present moment very attractive in the narrow border by the wall of the Orchid-house; the flowers are very freely produced, about a dozen in each short, dense raceme; they are apetalous, but the four sepals, being yellow, unite with the brighter yellow of the stamens, and produce a very pleasing effect. Some species of the genus, the present one included, are remarkable for having, in the normal state, geminate leaves, somewhat differing in size, the lesser one being frequently stipuliform. There is a variegated form of A. integrifolia, which is well worthy a place in any collection of wall plants. The Natural Order Flacourtiaceæ, with the exception of Idesia polycarpa (see THE GARDEN, July 21, 1877), and different species of Azara, does not contribute much to the decoration of the outdoor garden.

Among the Orchids there is little to note that is novel, unless it be Catasetum macrocarpum, which, as yet, we have been unable to find in any trade list. This species is more showy than many of its congeners, the petals being greenish-yellow, thickly spotted with reddish-brown, and the border of the very thick, fleshy hood, formed by the upper petals, being margined with deep yellow. C. cristatum is uniformly green, except the crested white labellum. For full description and explanation of the wonderful structure of the flowers of this genus, see Mr. Darwin's "Fertilisation of Orchids." Eria odoratissima, from Moulmein, is perhaps the prettiest of all the Erias. The large flowers are borne on long, drooping racemes, and are pure white in colour, with the exception of a rosy-purple bordering, and a streak or two of the same colour at the base of the lip; their scent is very powerful.
G.

Large Tulip Trees (see p. 481).—We have an old Tulip tree which has a bole 12 ft. or 13 ft. in height, the smallest girth of which is half-way up, viz., 14 ft. It is much larger at the base, the tree during its growth having raised there a mound of considerable size. It is also much larger where its huge limbs fork off from the stem. Its height is between 80 ft. and 90 ft., and the spread of the branches the widest way is 70 ft. Unfortunately its was planted too close to the house, being within 20 ft. of it, and had to be pruned away from the windows from time to time, or its general size and spread would have been much larger. It had a great quantity of small and medium sized branches broken off in the recent gale. The bark has a rough, corded appearance which is very ornamental. It is annually covered with flowers, but I have never noticed that they were sweet scented. This tree forms a welcome shade in summer for lawn parties.—JOHN GARLAND, *Killerton, Exeter.*

Peas in November.—We have gathered from G. F. Wilson Pea during the last fortnight several dishes of Peas, of which I send a fair sample; also some blossoms. Should there be no frosts, we expect to gather many more during the following week, the two rows which we have being full of pods.—A. S. RAINS, *Fernhurst, Southboro', Tunbridge Wells.*—[A good sample, bearing a profusion of blooms and pods, and quite free from mildew.]

Kerosene Stoves.—Has any reader of THE GARDEN had any experience with regard to these stoves for keeping out frost in fruit-rooms, in which Apples and Pears are kept through the winter? If used in this way would they in any way deteriorate the flavour of the fruit? Information on this point would greatly oblige.—G. NOAKES, *Mountfield Court, Sussex.*

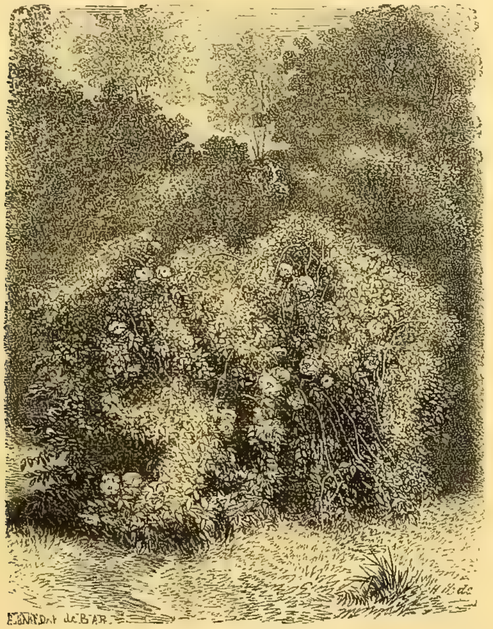
The Commom Brake.—An impression prevails in this neighbourhood (Gainsborough), that the Brake, or Eagle Fern will die if cut at the fall of the leaf two or three years in succession. Will any of your correspondents kindly oblige me with their opinion on the subject.—R. C.

Parsnips Rotting at the Crown.—At this time of the year, when Parsnips are left in the ground, many of them are apt to decay at the crown. This arises chiefly from the leaves rotting and then infecting the root. We always remove most of the leaves when the first of them begins to decay, and the roots, when lifted, hardly show a decayed spot.—CAMBRIAN.

ROSES.

CLIMBING ROSES ON GRASS.

There are remedies for some of our garden troubles if people will only try to find them out. There are few more unprofitable and tedious labours than that of eternally pruning and training climbing plants. In many positions we can never avoid this in a modified degree; in others we can avoid it, and get a much more beautiful result in doing so. For example, many vigorous trailers and climbers are more beautiful planted out on banks of turf and let alone than under the most careful training. The accompanying little woodcut, drawn by M. A. de Bar, and engraved by Mr. Hyde, shows the result of planting a free-growing Rose by itself on the Grass and leaving it alone. Such effects are, of course, most suitable for the wilder and more picturesque parts of gardens; but in a modified degree they may be carried out in any part of the garden. By this is meant that climbing Roses might be allowed to grow naturally, and be at the same time so thinned out and otherwise attended to that they would not become weak in flower or growth.



Climbing Rose isolated on Grass.

FORCING MARECHAL NIEL ROSES.

Those who are desirous of keeping up a good supply of cut Roses during the winter and spring months should get some standard Maréchal Niels, and also dwarf plants of that Rose, to grow on for another winter. Maréchal Niel, although one of the finest Roses for cutting purposes, is, nevertheless, not one of the most showy varieties for decoration in pots, inasmuch as the flowers hang down, and are hidden, to some extent, by the foliage. It is, therefore, best as a standard, but it is only in the form of cut flowers that I can recommend it. No Rose forces better than Maréchal Niel, and it is always much admired when used for decorative purposes. Plants of it potted now will furnish a few flowers during the spring. When June comes, those that have done flowering should all be shaken out of their pots and re-potted, so as to give them time to make growth for the following winter's forcing. I have cut fine flowers of this Rose at Christmas and on New Year's day, but that was from plants the wood of which was strong and well-ripened—important points in the case of Roses that are forced early. In order to ripen the wood well, the plants should be placed in a warm, dry spot out-of-doors, watering very sparingly during the months of September and October, and replacing them under glass in November, or somewhere free from frost. When started for forcing, they should be plunged in a bottom-heat of from 65° to 70°, giving top air for the first fortnight, so as to keep the tops of the plants cool, in order to check their breaking too quickly and feebly. If pushed on too fast, we do not get a good break, and this Rose generally produces its blooms on the strong shoots. As the buds swell, the heat should be increased from 55° to 60°. In Rose forcing, a strong top-heat should be avoided, as the flowers become drawn and sickly, and will often damp off before opening. Syringing, too, must be stopped, as water blackens the flowers and causes them to damp off. As soon as the blooming period is over, the plants should receive a slight pruning, and as soon as they begin to make a second growth—about the latter end of May or beginning of June—they should be carefully examined and potted, removing most of the old soil; if any plant looks sickly, wash the roots clean, and then repot it in a compost consisting of half loam, one fourth rotten cow-manure, one fourth one-year-old leaf-soil, and plenty of sand, and a small portion of soot, mixing all well together. The plants should then be plunged and grown in a humid atmosphere during the months of June, July, and August, watering occasionally with a little weak manure water, and syringing night and morning till they have made their growth. Sickly standards, as well as dwarf Roses, should be treated in this way, and as soon as they have made or finished their growth they should be removed out-of-doors and set in some warm corner. I have grown plants of Maréchal Niel with shoots from 10 ft. to 14 ft. in length in one season, and plants of it in 18 in. pots have produced from sixty to seventy blooms during the forcing season. Standards also flower well; they do not last more than three years in pots, but good strong plants of Maréchal Niel are so very cheap now that one does not mind the loss of a few plants. I find that Marechal Niel on the Brier, and on its own roots, do best for pot culture as well as for other purposes. It grows very strongly on the Manetti stock, but two or three fine plants of it have gone off with me at the graft or bud. The Brier in my opinion is the best stock for it, if we wish to obtain its Roses in perfection. In selecting standards for pot culture, see that they are budded on good clean healthy growing stocks, for if the stock be soft and sappy they will not succeed in pots. Rose growers should always lay up in autumn some good rotten cow-manure, and keep it until the following season, so as to have plenty for potting purposes, as this material forms an important item in the soil for pot Roses if used in proper proportions.

H. G.

LATE-BLOOMING ROSES.

Although we have varieties of the Rose which are said to be perpetual bloomers, yet we all know, pretty well, that the principal Rose season is June and July, extending in very late districts to August. After that time, if the season be favourable, many varieties continue to produce flowers, on the secondary growths, till late in autumn. Of these, the Gloire de Dijon is a good example, for it continues to flower until the frosts kill the buds; and Souvenir de la Malmaison is another. In fact, the nurserymens' catalogues enumerate a great number of what are called "autumnal Roses" in all the classes, but the sorts which are particularly disposed to bloom late or a second time—producing tolerably fine flowers—are not so very plentiful, and a reliable list of those which do would be highly serviceable. Owners of gardens who live in London during the season—that is, from the beginning or middle of May till August—never see their Roseries in perfection, and many are the regrets expressed on this head when they return to their country seats in autumn. True! they can have the flowers sent to them in London, in basketfuls if required, but they miss the charm of seeing them growing and gathering them fresh as often as they want them. Something may be done, however, by planting late-blooming varieties, and retarding the bloom of others when desirable. I knew a garden in Scotland where the gardener was very successful in keeping the flowers back to September and October, by simply pinching off the first buds at a certain stage. There was a general and extensive collection of Roses on the place, and he seemed to have operated on all in this way, for when I saw them at the end of September, there was quite a display of Roses on the beds, and very fine flowers the most of them were. The gardener informed me that it was his general practice, every year, to pinch the buds off when they were pretty well advanced, but before they began to expand, and that he then pinched pretty well back to where the wood and foliage were tolerably good, and the second breaks were all the stronger.

C.

Othonna crassifolia.—This is a remarkably interesting and peculiar plant, with flowers like a Daisy in shape, but of a pure canary yellow, and fat, small leaves like those of a Mesembryanthemum. It trails down so as to form a useful basket or shelf plant; it is now in bloom in various places about London.

NOTES OF THE WEEK.

Protecting Christmas Roses.—The large-flowered variety of Helleborus niger, the blossoms of which, until last week, were the most attractive amongst hardy flowers in London gardens, has suffered severely from the heavy rains and hailstorms which we have lately experienced. Valuable and hardy, therefore, though this plant is, it becomes necessary to protect the blossoms in some way during stormy weather, and the best plan of doing this which we have seen is to place spare lights over them, so as to allow of a free circulation of air about the plants. Hand-lights or bell-glasses will do, but if kept at all close, the expanded blossoms, as well as the buds, are very liable to damp off.

Cheilanthes elegans from Seed.—This Fern is not so common as it should be, on account of its being somewhat difficult to raise from seed; Mr. Ley, of Croydon, has, however, been fortunate enough to raise some 5000 or 6000 plants of it in that way, and when seen massed together in 4-in. pots, they have a most interesting appearance.

Jasminum grandiflorum as Standards.—A quantity of plants of this sweetly-scented white-flowered Jasmine, grown in the form of standards, are just now very attractive in the Pine-apple Nursery. They are grafted on stocks of the common free-growing kind at the desired height, and when well furnished with bloom, as we here find them, they are most useful for decorative purposes.

New Azaleas.—The new Azaleas, obtained from crossing A. amœna with the large-flowered kinds, are now in flower in Mr. Williams' nursery. In habit they resemble that of amœna, whilst their flowers are larger than those of that variety, and embrace various shades of colour. For forcing, these Azaleas will be very valuable, in proof of which, the plants in question have been flowering for some time past, although only subjected to ordinary greenhouse temperature.

Alnwick Seedling Grape.—Good examples of this new Grape may now be seen exposed for sale in Covent Garden Market. Its bunches are well formed, and the berries large and black; whether it possesses as good keeping properties as the Black Alicante we are yet unable to say, but the flavour is better than that of the Alicante, and the appearance nearly, if not quite, equal to it.

Finely-flowered Bignonia venusta.—I have recently seen this plant in the neighbourhood of London much finer than ever it has been my lot to see it before. Its shoots were trained up the rafters and sashes, from which depended hundreds of drooping racemes of large, tubular, amber-coloured flowers, forming such a blaze of floral beauty as can scarcely be conceived. This Bignonia is certainly the finest autumn-flowering climber for an intermediate-house that any one can possess.—W. H. G.

Sophronitis grandiflora in Winter.—The bright scarlet flowers of this beautiful winter blooming Orchid are now enlivening the Orchid houses in the different nursery establishments round London. Either in pots, baskets, or on dead stumps of Tree-ferns, this little Orchid is equally interesting, and it will succeed well even in an intermediate house. For coat bouquets, the blooms are much prized, on account of their bright colour and lasting properties.—S.

Androsace sarmentosa.—This is a pretty little rosette-like plant with silvery-green leaves. It will prove useful for planting on rockwork, and probably also for carpet gardening. It is as yet scarce, but, judging from examples of it in Messrs. Rollissons' nursery, it is a good plant, and therefore one the stock of which will doubtless soon be increased.—G.

Griffinia hyacinthina.—This is a useful plant at this season of the year. Its flowers, like those of other Amaryllidaceous plants, are produced from leafless bulbs; but, when associated with small Ferns or Palms, this defect is remedied, and the bright blue and lilac-tipped blossoms are shown off to increased advantage. Isolated plants of it in the Fern-houses in the Holloway Nurseries are just now very attractive.

Ipomæa Horsfalliæ.—This old but attractive stove climber is not nearly so frequently met with as it should be, considering the ease with which it may be grown, and the attractive character of its blossoms, which are produced in profusion during the winter months, and which last longer in good condition than those of many kinds of Ipomæa. A large plant of it, trained under the roof of one of the plant-houses in Messrs. Veitch's nursery, will shortly be one mass of bloom.—S.

Plants Unseasonably in Bloom.—Owing to the mildness of the season, a greater number of out-door plants may now be met with in bloom than is usually the case at the latter end of November. In the Hale Farm Nursery, at Tottenham, may now be seen in flower Narcissus Clusii, Bulbocodium vernum, and several kinds of Crocus, Lithospermum prostratum, Scabiosa caucasica, double Primroses (six varieties), Helleborus niger maximus, Aubrietias, Schizostylis coccinea, Stokesia cyanea, several varieties of Cyclamen, Iris alata, Sternbergia lutea, and several Asters, the best at the present time being A. grandiflorus. There are also many other plants more or less in flower, but these are amongst the most showy. In other places we have noticed the tall-growing Aster Novæ Angliæ, and its variety, roseus, conspicuously in bloom; also, French Marigolds in abundance, and common Nasturtiums.

Pteris Leyi.—For button-hole bouquets this Fern will be found to be one of the most useful, its long leaflets being formed in such a manner that, if a few flowers be placed against a single frond, they become, as it were, enclosed within its long, claw-like divisions.

Cymbidium Mastersi.—A good variety of this beautiful Orchid is now finely in flower in Messrs. Rollissons' nursery. The flowers, though considerably smaller than those of C. eburneum, are borne in much greater numbers. They are ivory-white, and are chaste and invaluable in small bouquets.

Palms and Calanthes.—A pretty combination is sometimes made at this season of the year with Palms, Aralias, and Ferns, interspersed with the various forms of Calanthes in flower; their white and rose coloured blossoms, set closely on gracefully drooping, spikes, harmonise well with such associates, and edged with variegated Panicum, an arrangement of this kind has a fine effect.

Orchids in Flower at Chelsea.—A good variety of the beautiful Lælia autumnalis is now finely in flower in Mr. Bull's nursery; Odontoglossum Rossi majus, too, growing and flowering freely on small blocks, forms a good companion for it. Large-flowered varieties of the beautiful Miltonia candida, together with the peculiar leopard-spotted Odontoglossum (O. Insleayi leopardinum), and other attractive kinds, are also in good condition.

Veronica Andersoni.—This is one of the best of the larger-growing Speedwells for winter flowering in pots, and its deep blue blossoms are invaluable in a cut state, or on the plant they supply a colour in the conservatory by no means plentiful. In mild winters it sometimes lives out-of-doors near London.

Pompone Chrysanthemums.—The neat little plants of this section, now to be found in the London markets, are the produce of cuttings inserted in cold pits or frames, or under hand-lights in June. These cuttings are obtained from old plants grown in some stray corner for the purpose. They are planted thickly in sandy soil, well watered, and kept shaded until rooted, when air, light, and sun are freely admitted to them. When well established, they are transplanted in an open border of sandy soil, 18 in. apart. Stopping the shoots is practised sometimes twice, the last time being just before they show bloom-buds. They then make dwarf bushy plants, which are lifted and potted in 5-in. or 6-in. pots, as soon as the buds are set, and placed in a half-shady situation until frost appears, when they are taken under cover until they come into flower.—S.

Dendrobium bigibbum superbum.—Numbers of plants of this Dendrobe, which is distinct in habit from any other kind, are now flowering beautifully in the Holloway Nurseries. The flowers, which are borne freely on long, slender, gracefully-drooping stalks, are of a rich lilac-purple, or rose colour. It comes from Torres Straits, whence Mr. Williams has just received a large importation. We also saw several hundred plants of this Dendrobe in Mr. Bull's nursery, which had just arrived from the same place.

Three Good Dracænas.—In a large collection of new and old kinds of these popular decorative plants, in Messrs. Rollisson's Nursery, we lately had an opportunity of selecting three of the most useful kinds for table decoration. These were D. elegantissma, a kind with narrow leaves of a glossy bronze colour, margined with deep claret colour; Guilfoylei, white, crimson, and green; and a rich orange crimson-leaved, kind named D. salmonica. These are all graceful habited kinds, with narrow drooping leaves, and which can be grown into large plants in very small pots.

Floral Decorations at the Norfolk Wedding.—The decorations on the occasion of the Duke of Norfolk's wedding, on Wednesday last, surpassed anything hitherto attempted. On entering the church, large Camellia trees were seen in the distance, right and left of the altar, literally covered by hundreds of pearly-white blossoms. The trees, which were 12 ft. high and 10 ft. through, filled the centre places in groups of fine-foliaged plants, graceful Ferns, and choice Orchids. A little lower down within the sanctuary the eye rested upon some groups of plants, the centres of which were composed of marvellous specimens of Pitcher plants (Nepenthes), some of which were nearly 10 ft. high, and one of them (N. Rafflesiana) had over sixty finely-developed pitchers on it; miniature Ferns and graceful Palms, amongst which were assorted the lovely spikes of the Odontoglossum Alexandræ, with numerous little white Hyacinths peeping out amidst green Moss and Maiden-hair Ferns, rendered the floral display on the occasion complete. Mr. Wills, to whom these decorations were entrusted, informs us that nearly 3000 white Camellia blooms were used in them.

THE INDOOR GARDEN.

FICUS ELASTICA.

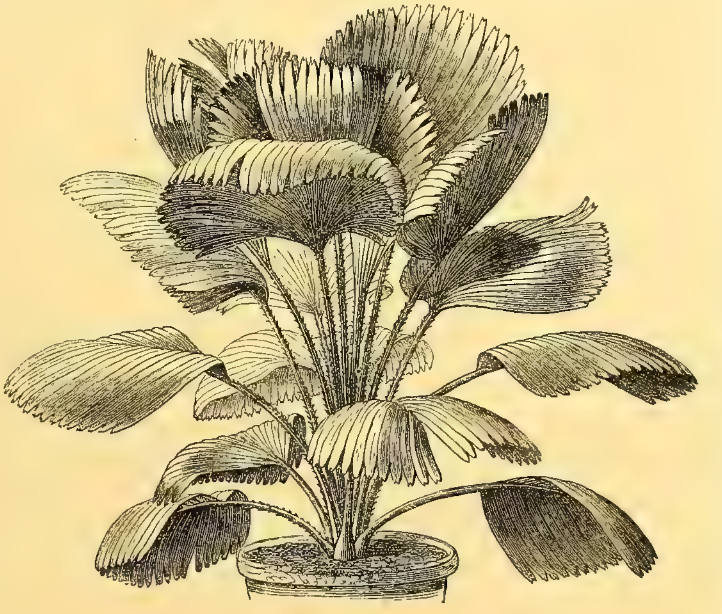
(ITS PROPAGATION AND TREATMENT ON A NEW PLAN).

THE India-rubber plant is too well known to need description. It is one of those plants which is extremely serviceable for all the year round decoration of apartments; and were not its price in a great measure prohibitory, it would doubtless be still more extensively employed for that purpose. Those who possess sufficient convenience for its propagation and after growth, should at once see to the working up a stock of it. If cuttings of it be inserted between now and January, they may be easily grown on into plants from 2 ft. to 3 ft. high by next autumn. To obtain handsome plants in small pots, they must be grown quickly, and nine months are quite sufficient for the purpose. Plants that run into the second year are apt to become naked at the bottom just where they should be best furnished with foliage. Many possess plants which have become leggy or too large for general decorative purposes. These may be cut into pieces, leaving one leaf to each cutting. Before taking off the cuttings, the plants should be thoroughly washed, as the welfare of the future plant will much depend upon the maintenance of health in the cutting leaf. Each cutting should be inserted singly in a small pot in good sandy peat. The soil should be made very firm around them, and a small stick inserted therein, to which the cutting leaf should be attached. If the pots be plunged in gentle bottom-heat and covered with a handlight or cloche, roots will be formed in about six weeks, when the plants may be removed to a more airy position in the house. In the course of a week, they may be shifted into 3 in. pots. By the beginning of April, they will have come fairly into growth. They should then be placed in 5 in. pots, and, when fairly established therein, they may, if required so large, be transferred into 6 in. pots. A warm, moist atmosphere, with liberal supplies of moisture to the root, must be maintained during the growing season. Shading should only be afforded in very hot weather, and discontinued as soon as the sun begins to decline in power. In fact, the greater the amount of solar heat they can receive consistent with their well-being, the greater solidity will the tissues acquire, and the plants will consequently be better able to resist those alternations of temperature to which they must later necessarily be subjected. The best plants I ever grew were planted out upon a slight bottom-heat in frames in May. They were gradually hardened off, so that, when fairly in growth, the lights were entirely removed. The summer was, as is generally the case in Switzerland, intensely hot, and they were saturated with water occasionally, no shade being given. In September they were potted and placed in a close house for about a fortnight. This open-air treatment I could not recommend in England; the average of seasons is not warm enough, but under glass they may be planted out, and will form plants immeasureably more handsome than the best pot culture can effect. I would recommend those who would desire to see this Ficus at its best, to give this system a trial. The leaves acquire a development which those of a pot plant can never attain; and, if carefully lifted, they will experience no check. Those who possess sufficient glass accommodation, should keep a plant or two for the especial purpose of affording cuttings. The terminal shoots make the best cuttings, as they start, when rooted, more freely into growth. The darkest corner in the stove will suit them very well; and a large, full-headed India-rubber is no mean ornament to a plant-house, and will be found very serviceable if large plants be required for decoration. I may add that E. Chauvieri may be treated in the same manner, and will be equally benefited by the same generous treatment. It forms, in fact, a capital companion plant to the ordinary India-rubber, and, where one is grown, the other should also find a place. J. CORNHILL.

Byfleet.

PRITCHARDIA GRANDIS.

THIS Palm is well named grandis, being undoubtedly one of the noblest fan-leaved Palms of small or medium growth yet introduced. It comes from the South Sea Islands, and consequently will require a high temperature in order to grow it satisfactorily. Its leaves, which are of a deep, shining green, are massive yet elegant in their arrangement on the plant. It would be difficult to imagine a better contrast than this plant makes growing in close proximity to the slender Cocos Weddelliana. It is a species that will evidently be in general request as soon as there is stock enough of it in the country to admit of its distribution. It is one of those plants to which no illustration can do justice, as regards conveying a full idea of its beauty. Being apparently a slow grower, it will be years before it gets too large for even a comparatively small house. Its cultivation will, no doubt, be similar to that of other heat-requiring Palms. It will need efficient drainage, plenty of water, and attentive shading in order to prevent the leaves from being scorched in bright sunshine. It has been introduced by Mr. Bull, but the name Pritchardia must be taken as provisional, as there is yet no certainty to what division of the Palm family it belongs. The leaves of these Palms are stated by Seemann to be used as fans and umbrellas in the Feejee Islands. In a shower of rain they are so worn on the back of the head as to throw off the water behind the wearer. T. BAINES.



Pritchardia grandis.

Jasminum Sambac.—Allow me to endorse "W. W.'s" remarks (see p. 377) respecting this Jasmine. Our plant of it covers part of the back wall of a plant stove, where it is allowed to run at liberty. We only thin out some of the weak growths in order that the stronger ones may get more light and air, as, if the wood be not strong and well-ripened, the quantity of flower is greatly diminished. We have had abundance of bloom for several weeks, and the plant still promises to keep on flowering for some time. With us it stands well in a cut state, and is invaluable for button-hole bouquets and lady's hair, the perfume being very delicate and sweet. Mr. Spelman (see p. 460) cannot, I think, be in possession of Jasminum Sambac, from the account he gives of it. I never remember seeing Jasminum Sambac doing so well as he says it does under greenhouse treatment, nor yet growing and flowering so freely in a pot as when planted out. —R. GREENFIELD, *Priory, Warwick.*

Tropæolum Ball of Fire as a Standard.—Plants of this Tropæolum come in very usefully at this season of the year, and they produce their brilliant scarlet blossoms in abundance all through the winter; in fact, by striking cuttings of it at different times, they may be had in bloom all the year round. For winter decoration, I insert a number of healthy cuttings in small pots in August, giving them a little bottom-heat; they strike in a few days, and are soon ready for a shift into 6-in. pots, a neat stick 4 ft. long being at the same time applied to each plant. By keeping them in a temperate-house they soon reach the top of this stick, and are ready for a final shift into 8-in. pots. Some neat umbrella-shaped trainers are now obtained, about 2 ft. in diameter and 4 ft. high; these are firmly fixed to each plant, the young growths of which are neatly trained round them till the whole surface is covered. Laterals will be produced freely, and, with a little care, a well-formed head will be the result, and blossoms will make their appearance by hundreds. Such plants have a charming effect in the conservatory when other brightly-coloured flowers are scarce.—H. Harris.

Sonerilas as Winter Flowers.—The following three varieties, viz., S. Hendersoni, S. marmorata, and S. argentea, were grown by me this season as a test, because I had previously considered them to be all alike; but I find them to be distinct. They are planted in rough peat and sand in 6-in. pans, and have grown freely. Of the three, S. argentea is the best, having larger flowers, and of a deeper pink than those of the others; the next best is S. mamarata. All three are now, and have been for these last six weeks, in profuse flower, and they look as if they would keep for some time yet in bloom. When at Kew, I used to grow S. margaritacea on hillocks on a tan bed, on which they grew well. As beautiful little Alpine stove plants, nothing can be better than these Sonerilas. They are easily propagated, and might be grown in any quantity in any stove. —J. Croucher, *Sudbury House, Hammersmith.*

Hyacinths and Tulips for Winter-flowering.—These, as well as Narcissi and other bulbs, are now being forced for market by thousands, one grower alone using as many as 80,000 bulbs yearly. They are potted in 6 in. pots as soon as received from Holland in autumn, and are placed in square beds out of doors, and thickly covered with Cocoa-nut fibre. This, being light, can easily be removed in order to select the most forward bulbs from time to time for placing in heat. In order to discover which are ready for forcing, they are turned out, and if well rooted are taken indoors, plunged in a gentle bottom heat, and kept dark until their flower heads show themselves; light being afterwards gradually admitted to them until they will bear full exposure. The first batch of Hyacinths and Tulips is sent to market the day before Chrismas, if possible, and a succession is henceforward kept up until they come into flower naturally out-of-doors. Roman Hyacinths are also grown is considerable quantities. They bear rapid forcing, and come into flower from October to Christmas, when flowers are scarcest. They are forced as a rule in shallow boxes, and potted four or five bulbs in a 6 in. pot just before they come into blossom. They are also largely used in baskets and vases, but their chief value is for making bouquets, as, on account of their sweet-scented pure white pips, they can be used for such purposes, with the certainty that they will be appreciated.—S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Jacaranda filicifolia.—Of this elegant plant, so difficult to propagate, there is now a number in the Victoria Nurseries. It should be more frequently used than it is, as a dwarf Tree Fern might be, among choice hothouse plants. It also makes a lovely table plant.—H.

Convolvulus mauritanicus as a Basket Plant.—This Convolvulus makes a beautiful basket plant in winter if liberally treated. The best way is to obtain established plants of it in 6-in. pots, and in autumn to place them in wire baskets filled with Moss. Thus situated, the slender branches droop gracefully over the edges of the baskets, and, if placed in a light position near the glass, yield a profusion of pretty blue flowers all the winter.—S. C.

Remarkable Growth in England.—Some of us may have heard of the vigorous growth of certain trees in the Tropics, and the following instance of growth in England may be worth recording:—A Bamboo growing in the conservatory at Syon House sent up a shoot in August, which is now about sixty feet high and 24 in. round the stem. The Bamboo is Bambusa arundinacea, or one of its forms.

Goodyera Rollissoni.—Will "S." (see p. 449) kindly say under what conditions of winter and summer heat he has grown Goodyera Rollissoni, as it is new, and I have been unable to learn anything about it?—H. B. [Goodyera Rollissoni, one of the most robust-growing members of the genus to which it belongs, was exhibited for the first time in 1876 by the Messrs. Rollisson, of Tooting. The conditions under which it is grown at Tooting are very simple. The plants are potted in a mixture of peat, Sphagnum Moss, and sand, and grown in a small stove which is moderately moist and not very hot; when removed into a house with a drier atmosphere, they are covered with a bell-glass. Under these conditions they grow vigorously, and break into beautiful variegation.—S.]

ORCHIDS.

SEASONABLE NOTES.

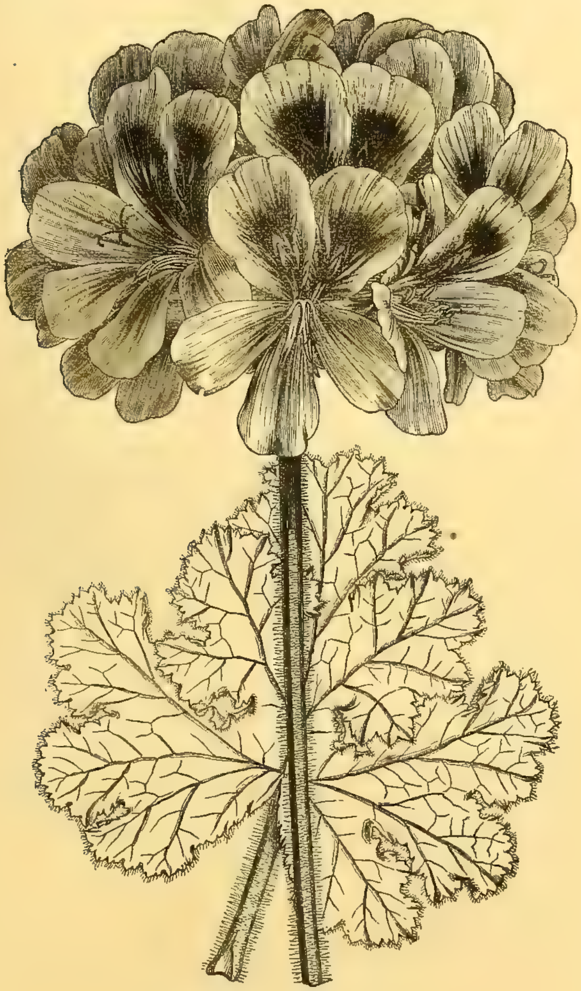
In purchasing Orchids care should always be taken to select the best varieties obtainable, the numerous variations from the original types being truly surprising. The genus Cypripedium contains many beautiful kinds suitable for decoration at this season of the year. Amongst these the best are C. insigne and its variety Maulei—kinds specially valuable for amateurs, as they may be grown successfully in an ordinary greenhouse. C. venustum, too, with its pretty marbled leaves and gay, slipper-like flowers, is also a desirable variety. Amongst stove kinds now in flower may be mentioned C. Sedeni and C. Harrisianum, both garden hybrids, and, like all hybrid Orchids, of vigorous and robust constitutions—a remarkable fact, which has led us to infer that, in a state of Nature, these plants must be, to a great extent, self-fertilised, and, consequently, much bred in, by which their constitution does not attain that vigour which is brought about by cross fertilisation. Zygopetalum Mackayi is an old but useful winter plant; in flowers of it now opening its blue and white labellum is very large and attractive, and with care its blooms will remain in perfection until Christmas. Amongst white-blossomed plants Cymbidium Mastersi is producing many-flowered racemes, and by the time the beauty of this plant is over C. eburneum will be ready to succeed it with large, Tulip-like, ivory-white blossoms, which are also long-lived; these plants are often ignored in small collections, but at this season really have few rivals. Another white-flowered Orchid of a different stamp is Pilumna fragrans, a kind which possesses a delicate perfume. Lælia anceps is now opening its rich, rosy-lilac and purple flowers, which are invaluable at this season of the year, and the variety called Dawsoni, with pure white sepals and petals, makes a lovely companion to it, but, unfortunately, too rare at present to be enjoyed by all. The pretty Oncidium cucullatum, now in flower, is essentially an amateur's plant, which may even be grown along with Ferns in a Wardian case. In a wild state it is found growing at from 6000 ft. to 14,000 ft. elevation—a fact which at once indicates the low temperature in which it will succeed. Phalænopsis Schilleriana is just beginning to open its beautiful moth-like, mauve and white flowers; an individual bloom of this Orchid for a lady's hair or button-hole bouquet is quite unrivalled. It is sometimes said that ornamental-leaved plants do not produce fine flowers, but here we have the dark green leaves transversely banded and blotched with white, and yet the plant produces many-flowered racemes of lovely bloom; moreover, it is the most vigorous grower in the whole genus. Phalænopsids are somewhat difficult to cultivate; their leaves are large and fleshy, and they are entirely destitute of pseudo bulbs, so that during winter great care must be exercised in watering them, or the result may be rotting at the heart. They succeed best in baskets or on blocks of wood, as under pot culture too much moisture is retained about their roots. Of curiosities amongst Orchids may be mentioned Restrepia antennifera, which is now quite a little gem. It is dwarf in habit, and produces reddish crimson and purple flowers in abundance, the narrow clubbed petals standing out in front like the antennæ of an insect. Saccolabiums are mostly spring and summer blooming plants; but some few species produce their gorgeous wreaths of wax-like flowers in winter, and these should be looked after by those who do not yet possess them. S. giganteum is one of the best, and at the same time a strong grower; S. violaceum is less robust, but very beautiful, and the wreaths of bloom of S. Harrisonianum are pure white. Vanda tricolor and its varieties, usually looked upon as out of season now, are in many instances delighting us with their large, chaste, and fragrant blossoms, which last a long time in perfection; they should not, however, be allowed to remain too long, but should be removed from time to time as flowers are required. If this be done the same plants will produce fresh buds, and flower again in spring. Dendrobium bigibbum, a species from North Australia, has been long known to us as a rare and beautiful Orchid, and, thanks to collectors, the plant is now in the market in tolerable abundance, and proves to be a perfect gem at this season. Coming, as it does, from the hottest point of Australia and New Guinea, at no great elevation, we should recommend its being placed in the East India House. Those on the outlook for novelties should watch for the arrival of the small-growing, new white Vanda, called undulata; it is now showing flower-spikes, and should these open it will be for the first time in Europe. The flowers, which are numerous, are pure white, the petals being beautifully waved at the edges; the lip is also white, stained with lemon. It grows at considerable elevations, in company with Pinus Khasyana, where it sometimes becomes covered with snow; it should, therefore, be an acquisition in the cool Orchid house. Colax jugosus cannot be called a purely winter-blooming plant, because it is continually throwing its lovely blossoms; but just now it is most interesting, the pure white of its flowers being beautifully contrasted with rich purple stripes and spots. To those who like to have white flowers in a cut state in winter, we say grow quantities of Goodyera discolor. It is a free grower, and when well established, every shoot will produce a fine spike of fine white flowers, which are admirably adapted for the decoration of the drawing-room or boudoir, or for bouquet-making.

W. H. G.

ROLLISSON'S UNIQUE PELARGONIUM.

This is one of the most distinct, beautiful, and useful of the whole family of Pelargoniums; and yet, strange to say, but few people grow it. Of its origin, all that is known is that it came up amongst some seedlings of other Pelargoniums about forty years ago in the Tooting Nursery. It is, therefore, probably not a hybrid, but a seedling from the old P. gloryanum, which it much resembles, and which about that time was extensively grown as a decorative pot plant. Be that as it may, however, "Unique" still maintains its name, for there is nothing like it, and for covering a back wall or pillars in a greenhouse or conservatory it cannot be surpassed. It grows freely and blooms profusely, and its leaves are delicately fragrant; even during the winter months dozens of its beautiful purplish-crimson trusses of flowers may be cut for indoor decoration, whilst as a bedder the effect which it produces is striking in the extreme, if the shoots be kept pegged down. Indeed, in whatever situation it is used, it is sure to give satisfaction.

W. H. G.



Rollisson's Unique Pelargonium.

THE FLOWER GARDEN.

TROPÆOLUM SPECIOSUM IN SCOTLAND.

This is a plant for everybody who will take the trouble to put it in the right place, and that is on the east, north, or west walls of a house. I do not know which is loveliest, its flowers, its seeds, or its leaves. The flowers are so numerous that the exquisite foliage seems jewelled with reddest rubies; the seeds are blue gems in carmine settings. Growing up Mr. Gossip's house, in his nursery at Inverness, is the grandest example of this plant I ever saw—a fit companion to Clematis Jackmani. It was finest there on the north and east sides of the house, but it had rambled all over evergreen bushes, producing a striking effect. This Tropæolum is perennial, and forms long underground roots, any 1 in. of which will make a good plant by being potted and grown under glass during the winter. Next April plant them out in good loam where they are to remain. From one plant myriads might be propagated. Mr. Gossip (formerly Howden & Co.) has sent out many thousand plants of it during the last few years, and this is probably the reason why it is so common in Scotland. People think it cannot be grown well in England, but, if half the trouble were taken about hardy plants that is taken about hothouse invalids, none of these gems would be so uncommon. Probably it likes the moisture of Scotland, coming, as it does, from the wet regions of the Andes; at Edinburgh, however, I saw no good plants of it, though I believe it is well grown at Perth. In my own county (Nottinghamshire) it has been very successfully grown. At Richmond-on-Thames, Mr. Kinghorn grows it as it should be grown; perhaps he will give us some advice about it, as I cannot see why it should not be the companion plant to Clematis Jackmani all over the kingdom. Plenty of moisture, plenty of shade, but no tree-drip, are requisites. Leave it alone when once established, and give it something to catch old of. Another superb hardy plant is the golden Tropæolum polyphyllum, which requires a warm sunny border and plenty of room to trail about. I have not yet bloomed Tropæolum pentaphyllum and T. tuberosum. Frank Miles.

Bingham, Notts.

MY TOWN GARDEN.

In addition to the plants which I mentioned in my last paper (see p. 414), I propose now to describe a few others which we have, and which I consider specially adapted for a suburban garden. Foremost amongst these may be named the early flowering varieties of Chrysanthemums, of which I have a dwarf variety with white flowers, changing to lilac, 3 in. in diameter, and very double. C. Precocite, a kind with golden-yellow flowers, very double, and of medium size; C. Scarlet Gem, a sort with bright crimson flowers, very double, and also of medium size; C. Delphine Caboche, with purplish-rose flowers, and very double; and C. Illustration, with light pink flowers, and of medium size. The flowers of these varieties are borne in great profusion, and keep the garden bright and cheerful from June to December; they grow about 18 in. in height, and, being neat and compact in habit, are desirable and effective in the mixed border.

Tall Lobelias constitute a very showy class of plants, almost sub-aquatic, and therefore require to be kept moist, especially in dry weather. They grow from 2 ft. to 3 ft. in height, and succeed very well in the open border; but, as they are somewhat tender, they require care during the winter. I get on very well, however, with the following two varieties, namely, L. Boule de Feu, a kind with deep rich scarlet flowers, of good substance; and L. Dazzle, which has a splendid spike of rich crimson blossoms, the foliage and stem being blood-colour, and very handsome. In the autumn, I throw two or three spadesful of ashes over their roots, and in spring lift the clumps bodily up and divide them, putting them singly into small pots; I then take them indoors for a month or so until the frosty nights have gone.

Dianthus hybridus is a small, but desirable class of Pinks, amongst which the best are Highclere, scarlet-crimson, and very double; Lucy Ireland, large, rich crimson, and fine in form; Marie Pare, pure white, and fine in form; Multiflorus, a scarlet kind, free flowering and vigorous; Quetieri, dark crimson, and fine in form; Rosette, pink, a fine distinct flower; Striatiflorus, a very striking striped variety; and Superbus, dark crimson, large and fine. These are perpetual-flowering varieties, blooming freely from early summer until December, and harmonise well with other plants in the front of the mixed border. Some are beautifully scented, and useful for cutting. They do very well in ordinary garden soil, with a slight mulching or sprinkling of fine rotted manure placed over their roots.

The Campanulas, or Bell-flowers, are useful plants, and easily cultivated in ordinary garden soil. The kinds which we grow are, C. carpatica, bright blue, 9 in. high, one of the showiest; of this there is a beautiful pure white variety. C. glomerata, deep purple or violet, 2 ft. high, and C. glomerata alba, pure white; C. grandiflora, deep blue, and C. grandiflora alba, white, both handsome autumn-flowering plants that grow about 1½ ft. high, and that have flowers from 2 in. to 3 in. across. C. Van Houttei has dark blue flowers, upwards of 2 in. in length, on stems about 2 ft. in height. C. persicifolia is blue, and very handsome, and C. persicifolia alba, white; of these there are also double varieties; height from 2 ft. to 3 ft. C. rotundifolia (the Scottish Bluebell) is 1 ft. in height. C. turbinata is a beautiful dwarf, rigidly-tufted plant, which produces large, openly-bell-shaped flowers of a dark purple colour; C. turbinata hybrida, a beautiful variety of the last-named, is more vigorous in growth, and flowers more profusely.

Of Antirrhinums, there are many named varieties; but, without resorting to cuttings, their distinguishing characteristics cannot be maintained. As thousands of seedlings spring up every season from self-sown seed, I pick a number of them up, and plant them out in a nursery bed, and, as soon as they show for flower, I select those that are not desirable, and throw them away. When thus grown, the flowers will be various, and while some are bad, it is equally certain that many will be good.

As regards Wallflowers, their cheerful appearance and delightful odour make them favourites with every one. They have been cherished plants for centuries, and will, no doubt, ever remain favourites with all lovers of sweet-scented flowers. As they sow themselves, and spread in all directions, they may be propagated in the same manner as Antirrhinums, and every spare corner may be planted with them at comparatively no expense.

Of Anemone japonica (a fine stately plant 2 ft. or 3 ft. in height, with rose-coloured flowers) and its white variety, or A. Honorine Jobert, too much can hardly be said. The latter resembles A. japonica in habit, but has large, pure white flowers, which are produced in great abundance until quite late in the autumn. Both kinds are easily propagated by division of the roots, and both should be cultivated in quantity where large supplies of cut flowers are required late in autumn or early in winter.

Ranunculus aconitifolius fl.-pl. (Fair Maids of France or Bachelor's Buttons), is an old and well-known border plant, and one which enjoys a liberal share of the patronage of amateurs throughout the country, but it is not often seen in gardens of large extent. It grows about 18 in. high, and bears a profusion of beautiful pure white double flowers. Ranunculus acris fl.-pl. (Yellow Butcher's Buttons) grows about 18 in. high, and bears numerous panicles of bright yellow flowers, which are very double. It is a free and continuous-blooming plant. Both these Ranunculuses are worthy of a place among the most select mixed border plants. They may be propagated by division of the roots in autumn, winter, or spring.

The European Globe-flower (Trollius europæus) is a handsome border plant, which grows about 2 ft. high, and bears large, lemon-coloured, very globular flowers. It is propagated by division, and is a plant which likes good, rich, loamy soil.

Common Double White Rocket (Hesperis matronalis albo-plena) is one of the most beautiful of herbaceous plants. It has white flowers, similar to those of a fine double Stock, and very fragrant; and they are borne on large, branching spikes, in great profusion. If allowed to remain permanently in the ground without transplanting they will certainly die, but by transplanting and parting the roots, say every second year, they will last long without any renovation from cuttings. The soil in which they attain their greatest luxuriance and beauty is a rich, deep loam, well drained.

Lychnis chalcedonica fl.-pl., a vigorous-growing plant, attains a height of about 3 ft., the flowers being brilliant scarlet, and borne in dense crowded heads. L. Haageana grows about 1 ft. in height, and is remarkable for its striking flowers, which are nearly 2 in. across, and of almost every shade of colour, from a brilliant scarlet to a pure white. Of the Chalcedonian Lychnis there are six distinct varieties. L. Bungeana is a very handsome brilliant scarlet kind, which grows from 1½ ft. to 2 ft. high; and L. fulgens grows about 1½ ft. or 2 ft. high, and has large, brilliant scarlet flowers two or three together, which appear throughout the summer. These Lychnises will grow in any good garden soil, well drained but moist, but are all the better for being removed into fresh positions every two years.

Morina longifolia is one of the most beautiful of border plants, and one which is highly ornamental both as regards foliage and flower. The foliage is about 1 ft. in length, bright green, slightly undulated and spiny; the flowers, which are arranged in whorls set closely together in the axils of the upper leaves, are white in the bud, and when expanded are of a pretty rose colour. It flourishes best in light rich loam, of considerable depth, being a tap-rooting plant. It may be increased by division in spring; but, if doing well, it should not be often disturbed. L. E. X.

Are Geranium cinereum and G. argenteum Identical? —When in the Pyrenees, this autumn, I found the G. cinereum of Lavanilles growing in fair abundance in the moraine deposited by the glacier torrent in the Cirque de Gavarnia. The plants seem to me as if in constant struggles with the elements of this wild and desolate tract. The stem was very short, and tufted; the root thick, woody, and fusiform, plunged itself deeply into the silt and stones; the petals were as large as those of our G. sanguineum, pale and ashen, with deeper prominent veins. G. argenteum is like it in so many particulars that one feels inclined to view it as a variety influenced by climate and local circumstances. The colour of the flowers may have led to the divergence in the matter of specific identity—but this is a hazardous test. Dr. Persoon describes it, I believe, under the name varium. Reichenbach omits it altogether. Woods queries cinereum under the name argenteum.—Peter Inchbald, *Hovingham Lodge, York.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Delphinium nudicaule.—This has been blooming very beautifully with us for these last few weeks. The young plants were wintered in a cold pit in the seed-pan, and planted out in May in light rich soil.—J. Whittaker.

Maurandya Barclayana in Ireland.—This lived out-of-doors with coal-ashes over the root through last winter, on a trellis against the house; it is now about 10 ft. high.—C. M. O.

Packing Plants in Damp Material.—I have received a great many different packages of plants from distant parts of the country lately. Some of them were on the road for eight or nine days. Both rooted plants and cuttings always come in very much better condition in dry packing than in moist. The latter soon ferments and causes the plants to rot, and it should never be used where it has to be in contact with the plants for more than twelve hours.—Cambrian.

Winter Crocuses.—Now, when Colchicums are over, the smaller flowers of the Crocus are among the most attractive of outdoor blossoms. These, if mild, dry weather prevails, will continue in perfection till Christmas. Even near London these autumn Crocuses in many places are in great beauty, especially where growing on light, well-drained soil. C. serotinus, C. sativus, and C. byzantinus are among the most showy and distinct; and, if well planted, they will bloom for months in succession. They are seen to the best advantage on Grass, on the edges of shrubberies, and similar places. The Grass prevents them from being spoiled by soil-splashings during heavy rains.—S.

The Collection of Show Tulips, formed by that veteran cultivator, Mr. Charles Williams, of Holloway, will be offered for sale, at the Mart, Tokenhouse Yard, on Monday, the 26th inst. In addition to all the best named varieties at present in cultivation, the collection includes a large number of breeders, from which some beautiful flowers have broken, and the sale in consequence will possess something more than the usual degree of interest. The cabinets, which are sufficient for the storage of the entire stock, will also be sold at the same time.

CANON KINGSLEY'S GARDEN AT EVERSLEY.

When Canon Kingsley was made Rector of Eversley, in 1844, he found the garden at the Rectory in as unsatisfactory a state as the rest of his parish; but it had capabilities, and these capabilities he used to the utmost. On the sloping lawn between the house and the road stood, and still stands, a noble group of three Scotch Firs, planted at the same time that James I., who was just building the grand old house at Brainshill, hard by, as a hunting-box for Prince Henry, planted the Scotch Firs in Brainshill Park, and the isolated clumps on Hartford Bridge Flats, and Elvetham Mount, which have covered hundreds of acres with their self-sown descendants. Next to the Firs stood a Birch and Arbor-vitæ, growing so close that their stems almost touched—a lovely pair; but in the Royal Charter gale they fell together, and though the gap they left at first caused great grief to the inhabitants of the Rectory, it was found afterwards to let in more light and air to the front of the house. A fine Acacia, and twin Arbor-vitæ, 30ft. high, completed the trees on the lawn. Most of the garden consisted then of a line of ponds from the glebe fields, past the house, down to the large pond behind the garden and churchyard. The Rector at once became his own engineer and landscape gardener. The ponds were drained, with the exception of three in the field, which were in course of time stocked with trout; Plane trees, which threatened in every high gale to fall on the south end of the house, were cut down, and masses of shrubs were planted to keep out the cold draughts of air, which even on summer evenings still stream down from the large bogs a quarter of a mile off, on the edge of Hartford Bridge Flats. What had been a wretched chicken yard, in front of the brick-floored room the Rector used as his study, was laid down in Grass, with a wide border on each side, and the wall between the house and stable was soon a mass of creeping Roses, scarlet Honeysuckles, and Virginian Creeper. Against the south side of the house a Magnolia (M. grandiflora) was trained, filling the air and all the rooms with its fragrance. Lonicera flexuosa, and Clematis montana, Wistaria, Gloire de Dijon and Ayrshire Roses and variegated Ivy, hid the rest of the wall with a veil of verdure and sweetness. In front of the study window, on the lawn, grows an immense plant of Japanese Honeysuckle, trained over an iron umbrella. This was given to the Rector by Mr. Standish—a small plant with only six leaves, in a pot—a year or more before he distributed it to the public, and carefully the little treasure was nursed and well it throve, being covered every summer with sweet flowers, and with bright purple berries for autumn decoration. Next to this, the pride of the study garden lay in its double yellow Brier Roses. These grew very freely, and in June the wall of the house and garden was ablaze with the vivid golden blooms, and the rooms were always decorated for two or three weeks with dishes of the yellow Roses, mixed with darkest purple Pansies on a ground of green Ferns. The Rector was never able to afford himself a greenhouse, so only a few plants were kept for bedding in a little pit; and, owing to the poor soil and the late and early frosts, which were peculiarly destructive, from the low, damp situation of the rectory, none but the hardiest and most common plants could be grown out-of-doors: but the borders were always gay with such plants as Phloxes, Delphiniums, Alyssum, Saxifrages, Pinks, Pansies, and, above all, Roses and Carnations, which grew, without the least trouble, in the greatest profusion. One bay in front of the house was well covered with Pyracantha, in which a pair of white throats built undisturbed for many years; the further bay was, up to 1860-61, covered by a single plant of Jaune Desprez Rose, but the severe winter of that year killed it, and its place was taken by hardier climbers; over the glass porch at the front door Clematis Jackmani, white cluster Roses, and Pyrus japonica were woven in inextricable confusion. Rhododendrons grow in the greatest profusion, and the neighbours always came to see the Rector's garden when two beds, on either side of the front gate, were in blossom. An ancient Yew tree, and a slight hedge of Laburnum, Hollies, Lilac, and Syringa, divide the

Canon Kingsley's Garden at Eversley.

rectory garden from the churchyard, and here, again, the rector turned his mind to making the best of what he had. The church, a plain red brick structure, was gradually covered with Roses, Ivy, Cotoneaster, Pyracantha, &c.; and, in order that his parishioners should look on beautiful objects when they assembled in the churchyard for their Sunday gossip before service, the older part of the churchyard was planted with choice trees, flowering shrubs, Junipers, Cypress, Berberis, and Acer Negundo, and the Grass dotted with Crocuses where it was not carpeted with wild white Violets. Of one curious fact it would be interesting to have some explanation. The wild Violets in the churchyard, which were all white, and those in a hedge adjoining the garden, which were all blue, grew and spread freely, always keeping true to their colour; every Violet (except the Russian) which was planted in the rectory garden, not half-a-dozen yards from either of these spots, was certain, in the course of two or three years, to turn a muddy reddish colour. They grew luxuriantly and kept their sweetness, but their colour was sure to change. The flora of Eversley is extremely interesting; the bogs and moors produce many rare and curious plants, and every hedge, wood, and meadow is covered in spring with all the common wild flowers in the greatest profusion, with the exception of Cowslips, which grow nowhere in the parish. Drosera rotundifolia, Narthecium ossifragum, Habenaria albida, Lycopodium Selago, L. clavatum, L. selaginoides, Ophioglossum vulgatum, Botrychium Lunaria are not at all uncommon in this district; and last, but not least, the beautiful Gentiana Pneumonanthe, which, owing to enclosures of common land, is becoming scarcer every year, and was guarded with jealous watchfulness by the Rector. R. K.

Winter Treatment of Auriculas in Pots.—Auriculas are now subsiding into their winter rest. Owing to mild weather, enlivened with frequent gleams of bright sunshine, they have kept active much longer than usual, and many have pushed up autumn trusses. It is well not to allow these to remain, as, if they expand, they will prove unsatisfactory, and it is best to pinch out the buds, leaving the stalks to decay at leisure. But little water is necessary, especially so, as sharp frost may set in at any time. It is a good plan to stir the surface-soil and add a little top-dressing where required; the plants derive much benefit from this when they commence to grow. Small slugs are apt to secrete themselves in the drainage holes at the bottom of the pot, which should be examined occasionally, for during mild nights in winter, the slugs sometimes venture out and do much mischief. As the humid character of the atmosphere will give sufficient trouble in the way of damp, no rain or drip from the lights must be allowed to fall on the plants, and the lights ought to be raised, back and front if possibe, during favourable weather, as there will be a certain exhalation of damp from the soil, which requires to be carried off. During severe frosty weather, especially what is known as black frost, when attended with brisk, drying, easterly or northerly winds, the frames should be kept close; but in mild, foggy, weather they may be opened. When the soil becomes very dry, advantage should be taken of open weather to give a little water.—D.

Philesia buxifolia.—I saw a fine plant of this in bloom last September at Glasnevin, near Dublin. The flowers are like small Lapageria blooms, rich red, and exquisite in shape and colour. It is a shrubby plant, with Box-like leaves. The Philesia comes from Valdivia, in Chili, from the same country whence our Lapagerias were brought some thirty years ago. The climate of Valdivia is somewhat similar to that of the Island of Chiloe, the native habitat of Escallonia macrantha—perpetual rain, but little frost or snow. Wherever, therefore, the Escallonia is hardy, probably the Philesia would prove hardy too. At Glasnevin it has stood 14° of frost. It is from this lower region of the Andes that we may expect many new and beautiful hardy plants. The Philesia requires a bog soil: moist peat and sand suit it admirably. There is a plant of it in the winter house at Kew, which might be advantageously studied by London cultivators. For any moist climate, where Fuchsias do well, I am sure this plant will be a glorious acquisition.—Frank Miles, *Bingham, Notts.*

Manure to be Efficient, must be as close to the surface as possible, in order that the nourishment afforded by it may be within easy access of the rootlets of the plants. If dug in too deeply, several years may elapse before it is decomposed.

SCENT-YIELDING PLANTS.

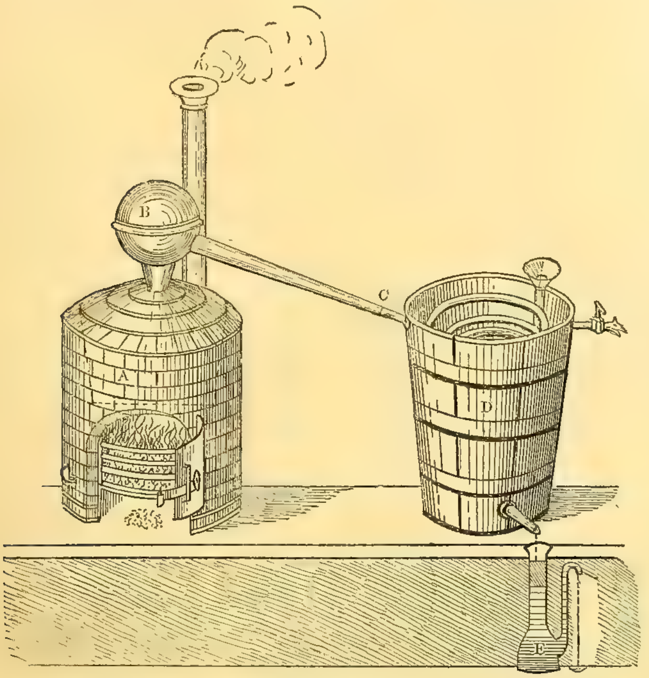
By G. W. SEPTIMUS PIESSE, Ph.D., F.C.S.

Geranium, Citronella, Patchouly, Verbena Grass.

Geranium.—Several varieties of the Natural Order Geraniaceæ bear scent-yielding leaves, but although these plants were introduced into Europe from the Cape of Good Hope so far back as 1690, it was not until 1847 that the Pelargonium capitatum began to be systematically grown for the purpose of extracting its scent-yielding principle, known in commerce as the Otto of Rose-leaf Geranium. This was first done by M. Demarson, of Paris, and since that time its cultivation has vastly increased in France, particularly at Montfort-Lamaury, in the Department of Seine-et-Oise, and it has even more rapidly spread in Algeria, Mr. Monk, an Englishman, and M. Chiris pushing its production extensively. The same kind of culture is also carried on in Spain, by Senor Robillard, of Valentia. The propagation of the Pelargonium by means of slips is too well known to need description. One ton weight of leaves will yield by distillation an average of two pounds weight of Otto, the lowest wholesale price of which is, say £6. Senor Robillard has about fifty acres of Rose Geranium under tillage, more or less, according to the demand. He strikes the cuttings from September to October, and puts them out in April; the plants have to be replaced every three or four years at longest, the land being well manured annually. About 3000 plants are required per acre.

Scent-yielding Geranium (P. capitatum).

The Still.—As so many odours are obtained by means of distillation, the still becomes an important instrument to the cultivator of plants for their scent. The saleable products of the year can, by its aid, be quickly put upon the market; on the other hand, he can dry and stack the products, and distil them at his leisure when labour is not elsewhere required. The accompanying illustration shows its general construction pretty clearly:—*A* is the alembic or boiler; *B* is the still-head; *C* is the junction of the steam tunnel with the worm pipe in the tub *D*; *E* is the Otto separator. Assuming that Patchouly is to be stilled, the still-head wants to be taken off at the joint shown by the ring on the top of the alembic; the boiler would then be filled with as much herb as it would hold, together with as much water as would about half-fill the interstitial space; the still-head would then be replaced and joined to the worm; the tub *D* is kept full of cold water. Fire would then be applied; and, when the water boils in the alembic, the steam collects in the head and travels down the tunnel into the worm pipe, carrying with it the Otto of the plant; here, the worm being surrounded with cold water, condenses the vapour into a liquid form, from whence it trickles into *E*. Water, being heavier than the Otto, falls to the bottom, and finds an exit from the separator, as seen in the cut; the Otto accumulates in the separator, and is decantered when necessary. If the worm-tub be too small in proportion to the still, the water in it quickly becomes hot, and so ceases to condense the vapour; in such a case cold water has to be supplied by the funnels, the tube of which reaches nearly to the bottom of the tub; the hot water, being lighter than cold, flows away by the tap, as seen at the top side of *D*.



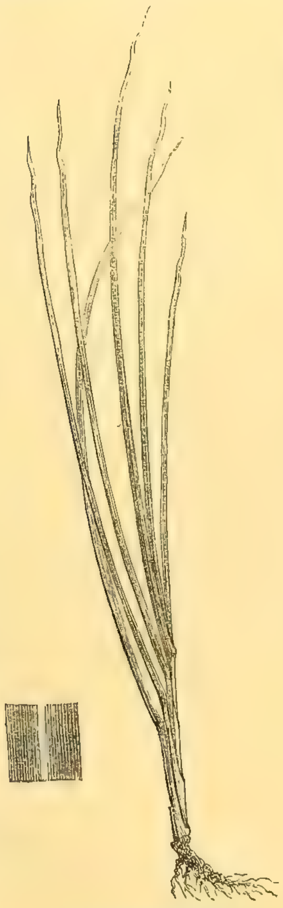
A. The Alembic; *B*. The Still-head; *C*. Junction of Worm-pipe in the Tub *D*; *E*. Otto Separator.

Patchouly.—This is one of the most unique of scent-yielding plants. It is a Labiate, stated by some authors to be a native of Silhet, a district of Bengal, some 120 miles from Decca; it is now, however, known to grow in Java and Ceylon, and also on the Malay coast, and one must say in China, because its odour is very clearly defined in the Black-stick Ink, commonly called Indian Ink, that comes from that country. Deccan Indian shawls were known in Europe as really of Indian manufacture by their peculiar odour, which was due to their being packed for exportation along with Patchouly, a favourite scent-plant of the district. About the year 1850, Patchouly began to be imported into this country in bales of 2 cwt. each, and some few adventurous dealers distilled it, and obtained small portions of Otto, but at a great cost; the herb being badly harvested, and stacked too damp, become mouldy in transit. Europe, however, now obtains Otto of Patchouly from the fresh herb. A bale of good dry Patchouly will yield about 3 lb. of Otto, worth about £14. The consumption of Patchouly in the perfumery trade of Europe is something beyond belief.

Pogostemon Patchouli.

Vervain.—An exquisite scent is derived from the Aloysia citriodora, or Lemon-scented Verbena. This plant, as a scent-yielder, is only cultivated, so far as I am aware, by Senor Robillard, of Valentia. He offers the Otto for sale to the trade at 20s. the pound weight, a fact which indicates that the plant grows better in Spain than in England, where it will only live out of doors on walls; but we have do specific information to give as to its cultivation.

Lemon Grass (Andropogon citratus) is cultivated for the scent which it yields, to a large extent in Singapore and Ceylon, also in the Maluccas; it affords its otto freely by distillation. Lemon Grass Otto, or, as it is sometimes termed, "Verbena," on account of its similarity of odour to that of the Aloysia citriodora, is cultivated by Mr. Winter, of Ceylon, who produces annually about 1000 lbs. weight of it. Mr. John Fisher, of Singapore, distills even more.



Verbena Grass
(Andropogon citratus).

Citronella
(Andropogon Nardus).

Citronella Grass (Andropogon Nardus) is cultivated both by Mr. Fisher and by Mr. Winter, its Otto being obtained by means of distillation. The importance of the trade in this one article in Ceylon alone may be estimated at £15,000 annually. At Gaylang, Singapore, there are about 1000 acres under Citronella, Lemon Grass, and Patchouly. Geranium Grass Otto is obtained from the Andropogon Schænanthus. This Grass, sometimes called Ginger Grass, is a wild plant of Central and Northern India; its otto is produced by distillation, but it has not much reputation out of India.

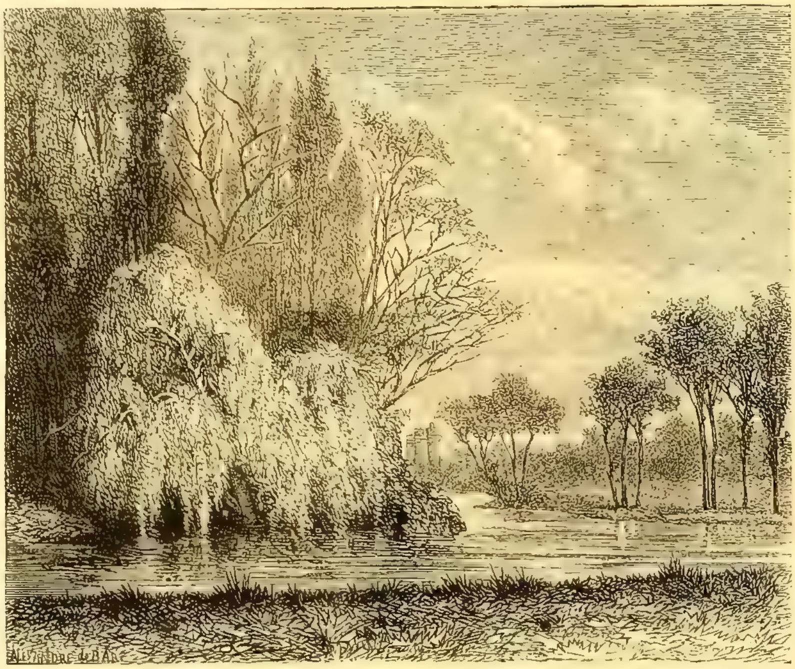
PLATE CI.

HARDY PRIMROSES.

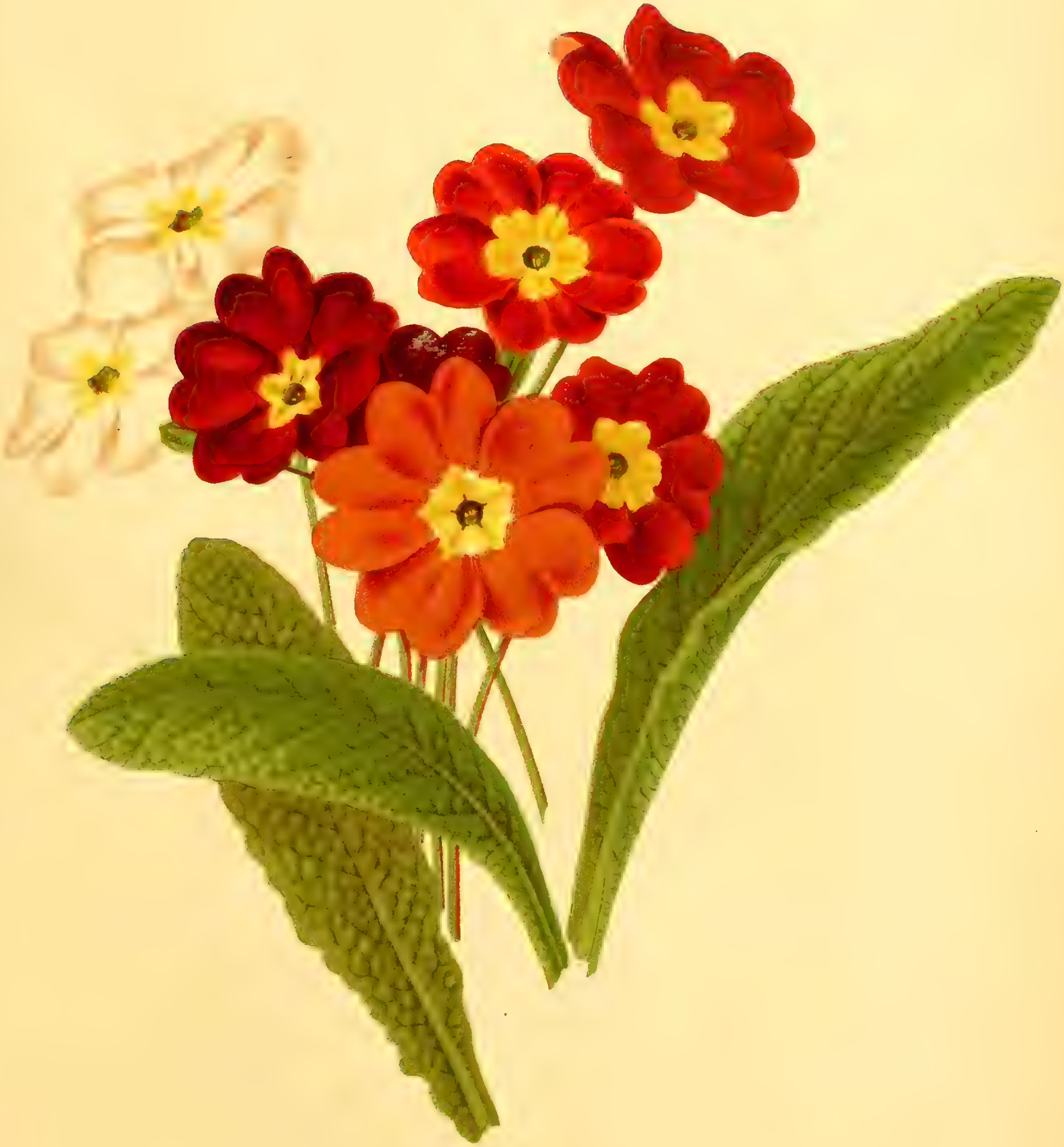
(WITH FIGURES OF IMPROVED VARIETIES.)

Drawn by MRS. DUFFIELD.

THE accompanying illustration depicts, much more forcibly than words can express, the extreme beauty to be found in some of the more recently-raised garden varieties of the hardy Primrose. All who have had the opportunity of seeing the lovely forms of Primroses exhibited at South Kensington early in spring, will admit that, in regard to this particular flower, varieties have been raised of late years of singular richness of colour and excellence of form, while the same robustness of constitution and free habit of growth that characterise the common variety of our hedgerows has been preserved. It may be long before our woods and hedgerows are decorated and beautified with such gems as these, but it is at least possible that in wild gardens, and semi-cultivated spots that lie just outside the garden proper, we may yet see seedling forms of these Primroses in their varied hues of crimson, red, purple, violet, mauve, white, yellow, and other tints, thus bringing into the midst of the wild flowers of spring colours to which we have hitherto been strangers, thereby enhancing the beauties of Nature by the addition of such charms. It would prove an impossible task to endeavour to trace out from the first the origin of high-coloured Primroses; for, although rarely found in woods in a state of Nature, yet we have long been familiar with red, pink, and lilac tints amongst the semi-wild forms often found growing in shrubbery borders or by the sides of woodland walks, and in places where the Primrose had been brought into contact with the pollen of some of the old garden Oxlips or varieties of the Polyanthus. None, however, have their history or origin so little known as the fine old double forms, of which there are probably a dozen kinds perfectly distinct in colour, and yet showing indications, both by leafage and habit, that they have resulted in sports from others. It is a curious fact that the deeper the hue in the double kinds the less robust the plant, and both the rich crimsons and deep purples are most difficult to cultivate in ordinary summers; but, in the extreme north, where the climate is at once temperate and moist, they grow almost with luxuriance. The climate of Ireland also favours them considerably, but in the south and midland districts it is found necessary to afford them shade and abundant moisture during summer, and the protection of glass generally from the effects of continued frosts and rains in the winter. The white, lilac, and sulphur kinds are, on the other hand, very hardy, and appear to stand our summers and winters, if established, with impunity. The double crimson, of which there are two diverse shades, bears strong evidence of close relationship to that most charming single variety, Auriculæflora. In colour, in habit, and in leafage the likeness is most marked, and if, as is sometimes assumed, these doubles originated from seed through the agency of some of the old florists of the eighteenth century, it is not unlikely that the single Auriculæflora sported from the crimson double, just as we have seen a very beautiful single lilac form that had sported from the double of that colour. It is worthy of note that the production of double flowers of the Primula family seems to run in cycles; and perchance we may yet see other new double forms developed out of the beautiful single kinds now so largely being produced. The Chinese Primrose is an illustration of this, as many of the finest kinds that have been put into commerce originated some years since at certain establishments near to Southampton, where the seed-strains for several years invariably produced a good percentage of double flowers from seed saved from single ones; at length, however, in spite of all possible care, that curious quality died out, and now not a single double flower is produced. That the quality is not entirely lost is, however, evident, as we now and then see, as in the case of Mr. Gilbert's Primroses, some recently-raised doubles of great excellence, thus showing that there is a sort of eccentricity about their production which admits of but a doubtful explanation. I find the purple and salmon double hardy Primroses to be closely allied in character; so also are the white, lilac, and blush; and, again, the sulphur and the early purple, so that it is just possible that if there be any of them originated from seed in remote days, they may have extended their kind, probably one-half or more, by means of sports. Whether sport or species, or garden variety, however, the beautiful Auriculæflora has proved to be a most valuable pollen parent, as regards the production of a lovely progeny. Equally valuable is that charming kind which has so long been known in commerce as Primula altaica, but which Mr. Niven has told us, is but Primula vulgaris grandiflora. Whatever may be its correct designation, it has, because of its lovely hue and colour, robust habit, and large pin-eyed flowers, proved a specially fine seed parent; and this, fertilized with the pollen of P. auriculæflora, a thrum-eyed kind, and therefore specially suited to make a pollen parent, has produced some of the most beautiful of the newer coloured Primroses. Primula auriculæflora is in itself one of the most perfect of flowers, and its intensely rich crimson hue, clear yellow centre, and thrum-eye are points that can hardly be excelled. That it is so perfect, however, affords no reason why these excellent points should not be turned to good account, and the examples illustrated show to what good purposes they have been put. Rosy Morn, deep rosy red; Gem of Roses, rosy pink; Queen of Violets, deep purplish violet; Crimson Banner, deep maroon-



Weeping and erect-growing trees on the margin of a small lake. Drawn by A. de Bar, March, 1877.



VARIETIES OF THE COMMON PRIMROSE. (PRIMULA VULGARIS

crimson; Violacea, pale purple; Fairy Queen, pure white with good eye, and Sulphurata, large sulphur colour. These are some of the earliest progeny of the cross we have mentioned, and very beautiful varieties they are. Of more advanced form and greater substance of petal are Virginia, a very pure white of excellent form; Brilliant, a very fine variety, in colour rich vermillion-red and of the finest form and substance. King of Crimsons, rich massive crimson; Violetta, a very beautiful violet-purple; and Lustrous, very deep coloured crimson, with small perfect lemon eye. These are some of more recent production that indicate beauty and excellence, almost amounting to perfection. The propagation of these kinds, as well as of all the perennial Primroses, is necessarily slow, except where they can be reproduced true from seed. A seedling plant may produce two others the first year after blooming; these may again produce six or eight the next year, and thus it will take several years to work up 100 plants, a fact which shows that some patience must be exercised ere the newest forms can be circulated largely. Amongst growers of hardy flowers the production of forms from seed, even from the best kinds, is not so satisfactory as might be desired. No doubt flowers specially fertilised will generally produce some good results, but, such seems to be the inevitable tendency of the Primrose to return to its pristine form, that it is by no means uncommon to find even the very best flowers producing a large proportion of comparatively inferior kinds. Of course these are of varied and rich hues; but, perchance, lacking the other qualities that go to make up a first-class flower. Then there is also a possibility that the seed crop may be at times almost *nil*; this year, for instance, owing to the many spring frosts that occurred, and from other causes, not one-twentieth part of the flowers have produced seed; indeed, as a crop, it is a very short one. It is well that this should be known, because it illustrates how difficult it is to secure an abundance of productive material from select varieties of these things, and thus to bring them within the reach of all classes. Of all the Primula family none can excel these early Primroses in loveliness and freshness; and, with the exception of the tender Chinese Primrose, they are the earliest of all to flower.

The specimens from which our plate was prepared were furnished by Mr. Dean, of Bedfont.

A Few of the Best Chrysanthemums.—In a large display of Chrysanthemums, arranged in the Camellia-house in Messrs. Veitch's nursery, a good opportunity is afforded for selecting the best and most effective flowers in the various sections. The Japanese kinds are generally admitted to be the most graceful, and among them are now many kinds possessing colours previously unknown in Chrysanthemums. The kind named The Cossack bears narrow-petalled flowers of a brilliant flame colour; these contrast effectively with the snow-white, cushion-like blossoms of Elaine, the deep claret-coloured Gloire de Toulouse, and the bright purple, light, and graceful flowers of Purple King. Perhaps, however, one of the most elegant of all is Gold Thread, the petals of which are, as the name denotes, slender and thread-like, and of a bright golden-orange colour. Among incurved or show varieties, the bronze and yellow varieties of Jardin des Plantes still hold a foremost place; Prince Alfred is the best purple-crimson kind, and the white and golden Queen of England are both bold and effective flowers in their respective colours. Alfred Salter, an old but excellent kind, with delicate pink-tinted petals, is much thought of; as is also one similar to it in colour named Pink of Perfection. Empress of India is an excellent large white, and Guernsey Nugget is still the best sulphur-coloured kind. Among Pompones the most striking sorts are perhaps the dark magenta-coloured Progne, the most sweetly-scented of all Chrysanthemums, and one which should be largely grown for furnishing cut flowers, being devoid of that unpleasant smell to be found in many kinds of Chrysanthemums.—S.

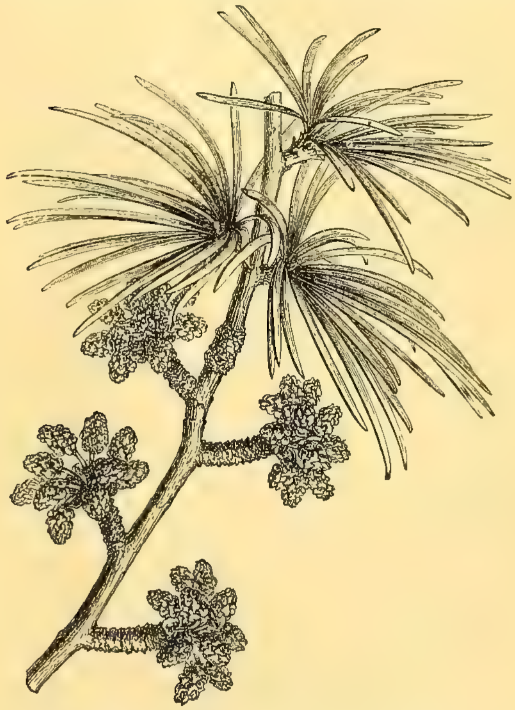
Aucubas for Market.—Small, compact plants of the various forms of Aucuba, when well furnished with berries, are much valued in London during winter for window decoration. The way in which they are chiefly obtained is by fertilising old-established plants with male pollen, and then layering in light sandy soil, good-sized branches with bushy heads being selected for the purpose, and pegged down. In a short time they strike root, when they are severed from the old plant, and in autumn are lifted, potted, and placed indoors to colour their berries. Standard plants are obtained by grafting on the common Aucuba.—S.

THE GOLDEN LARCH OF CHINA.

(PSEUDO-LARIX KÆMPFERI).

The Larch, represented by the accompanying characteristic, catkin-bearing twig, is generally believed to have been discovered by Kæmpfer; but it was certainly re-discovered by Fortune, on the mountains of the Province of Che-Kiang, in North-eastern China, at an elevation of 3000 ft. above the sea, and was introduced by him into British gardens in 1852. As yet, however, it is only represented here and there by a few plants. This scarcity is principally owing to the difficulty experienced in procuring seeds, and the fact of it being difficult to propagate by other means. The best plants of it with which I am acquainted—one being 20 ft. high—are growing vigorously in light sandy loam, making from 1½ ft. to 2 ft. of growth annually; but not one of them has a continuous or uninterrupted stem, in consequence of the immature points of the shoots being injured by the untimely frosts of early autumn. Independent, however, of such checks, the annual increase of the trees in height is considerable, though we need never expect this Larch to attain in England 120 ft. the height which Mr. Fortune found it to reach in China. Nevertheless, it is well worthy of a place in the Pinetum or pleasure-ground, on account of its beautiful pea-green colour in spring, its rich dark green in summer, and, as the English name implies, its golden-yellow foliage in autumn. While seeds of it cannot be procured, the best means of increasing it is by cleft grafting it on short, stout pieces of its own roots about the end of January or beginning of February. The after success will greatly depend on the amount of moisture kept in the propagating case, which must be regulated so as never to accumulate on the scion.

Geo. Syme.



The Golden Larch of China (Pseudo-larix Kæmpferi).

Slow Growth and Durability of a Coniferous Tree.—A remarkable instance of this is recorded in the "Transactions of the New Zealand Institute," by Mr. John Buchanan. The tree in question is Podocarpus spicata, the Matai of the Maoris, a common forest tree almost throughout the island of New Zealand. Mr. Buchanan describes a prostrate trunk, which was pointed out to him in a valley near Dunedin. He calculates that the tree must have lain where he saw it at least 300 years, from the fact that its trunk was enfolded by the roots of three large trees, which must have grown from seed since its fall. The three trees seated upon it and rooting in the earth on both sides, thus holding it in their embrace, are all Griselinia littoralis, with trunks 3 ft. 6 in. in diameter. They were recently felled, and the growth rings count over 300, thus approximating 300 years.

THE FRUIT GARDEN.

GROWING GRAPES ON BACK WALLS IN LEAN-TO HOUSES.

Allow me to furnish a few remarks about growing Grapes on back walls, a plan which has answered satisfactorily at Castlehill. I do not mean to assert that Vines have not been grown on back walls to stand for a time until the permanent ones covered the entire roof. When this is the case the supernumeraries are invariably removed; for, if both be left, those on the back wall only exist in a state of debility. It is a well-known fact to all practical gardeners that, after the roofs of Vineries are covered with foliage, the interior of the house below the trellis becomes useless for any other purpose from want of light and sun; this also may be said of back walls. Deliberating one day how to make the most of space, a thought occurred to me that by leaving a portion of the roof free from leaves, the back wall might be also utilised as well as the greater portion of the front roof. The next thing to be considered was the best means of getting the most light and sun without decreasing too much the front roof space. After mature consideration I found that the best means to obtain the largest space for training Vines was to cover one-third of the lower part of the front roof all over, then from this point to leave a space of about 2 ft. free from leaves between each Vine to the top of the house, so that the small sacrifice of space made in the front roof trellis would give ample light and sun to the back wall, which would thus also become available; this would more than compensate for the slight decrease of front roof space by a clear gain of one-fourth more total trellis space. This is not the only advantage, for the whole of the house below the Vines becomes available for growing any sort of fruit trees in pots, or any of the numerous varieties of Palms, or any other kinds of fine-foliaged plants; any of these, judiciously disposed, tend much to enhance the appearance of a range of Vineries, provided a clean selection of plants be made so as not to contaminate the Vines. To grow Vines on this system, the front Vines must be planted wider apart than usual, say two instead of three; this would be about one Vine to every one and a half rafter. The two end Vines should be planted at the two extreme ends, in the usual way; care must be taken to have the back wall trellis at a distance of 15 in. from the wall, in order to prevent the bunches from rubbing and to give room for development. The unsightly back walls are hidden with green leaves and fruit, which, together with the plants above mentioned, greatly improve the appearance of the Vinery. Some may be inclined to think this mode of growing Vines may not answer, as the bunches are more exposed to the direct rays of the sun, and that consequently scalding might ensue, especially at the stoneing season, with Muscats and Lady Downe's Seedling. But this is easily obviated by leaving plenty of foliage over the bunches to shade them during that critical period. I have taken ample time to test this mode before publishing these facts; and I may say that I have not only got greater weight than before from the same house, but that the quality is as good. I will give a proof of this by stating that I this year exhibited bunches grown on this system in my collection of twelve varieties of fruit, two sorts of Grapes, black and white, and I was awarded the first prize, a silver cup. The show was held in Taunton, on August 16th, open to all growers, and that show is generally admitted to be one of the best in the west of England. I have been asked by many noblemen visiting here, who are interested in Grape growing, and highly pleased with the results in the fruit, and the improved appearance of the houses, to give publicity to this plan in one of the leading garden periodicals. This I have now done; and I think any of your readers who determine to try this mode will be satisfied with the results in both respects.—D. Wilson, *Gardener to the Right Hon. Earl Fortescue.*

—— I write, at the request of my gardener, Mr. Wilson, to corroborate the account which he has given you of his plan of Grape-growing. He tried it for the first time, with my full approval, three years ago here, and has continued it with the excellent results which he has faithfully described. From the explanations which he gave me of it, I expected it to succeed, but the results have exceeded my most sanguine hopes, both as regards the quantity and quality of the Grapes, and the number of other plants kept in perfect health in my Vineries.

Castlehill, North Devon. Fortescue.

FIELD CULTURE OF HARDY FRUIT TREES.

(Continued from p. 476.)

Keeping up an Orchard.

When we have planted and reared a tree as a careful grower should do, and when the growth, both of the stem and the crown, has received the requisite amount of attention, a great step in advance has been made. But a large amount of work still remains behind, which is required by all trees, whether they are healthy or sickly. On the one hand, they must be protected against outward accidents, and vicissitudes which frequently endanger the success of an orchard; and on the other, we must fight against insects and other dangers by which the trees may be attacked. These little matters are generally only too much neglected, just for the very reason that growers look on them as being so insignificant as not to merit notice. But in fruit culture there are no little evils. First of all, we must give the tree the support which is necessary for it; first, in order to give the stem the proper direction if it be inclined to grow crooked; secondly, to prevent the young branches of the crown from being damaged by the wind; and, lastly to protect it against the effects of accidents from men or cattle. In the first case a strong stake is planted at the same time as the tree at a few inches from the stem. The young tree is attached to the stake by means of a withy, taking care to place a quantity of Moss or Hay between the withy and the tender young stems, so that the bark may not be injured by the swaying of the tree backward and forward. If the tree be inclined to grow crooked, it requires to be attached to the stake by several of these ligatures. When there is a difficulty in straightening a crooked tree, a number of longitudinal incisions should be made in the hollows of the curved portions, carrying them upwards and downwards a little beyond the curve. At the same time that the stake serves for straightening the tree or for preventing it growing crooked it is useful for training the crown. For this purpose it should be from 18 in. to 30 in. taller than the subject to which it is attached. Where young trees are sufficiently strong and straight to need no stake, a special stake is used for the crown (see p. 474). Growers are as a rule very neglectful in training their young subjects. Under the pretence that fruit trees are not grown for ornament but for use, and that a crooked tree will give as good fruit as a straight one, growers plant either crooked trees, or let those which are naturally straight twist themselves in any direction, without in the least caring about their future. A curved stem which departs from the perpendicular will infallibly bend lower and lower as years roll by. As a matter of fact, in a tree like that in fig. 42 the lower part (*a*) grows healthfully, while the upper, (*b*) is always sickly. This being the case the crown becomes top-heavy and bends the stem nearer the earth every year. All this is easily avoided by early training by means of stakes. When the evil has not gone too far, it may be remedied by the use of strong stanchions and struts, as shown in fig. 40 (p. 473). The straightening of bent or crooked trees is a matter of great importance, especially in the case of Apple trees; the great breadth of their crowns and of their roots rendering them liable to become uprooted. If the trees grow crooked on account of the prevalent winds, they may be straightened by means of a short stake driven in the ground obliquely, on the windward side of the tree, at a few feet distance from the root. To this a galvanised wire, provided with a raidisseur, may be attached, the other end being fastened to the upper part of the stem of the tree. By gradually tightening the raidisseur, the tree may be kept perfectly straight. It is a great mistake to suppose that the training stake, properly so-called, which has just been described, is sufficiently strong to protect the tree against the effects of the wind. It is not merely necessary to provide against trees being uprooted by the wind, but in the case of newly-planted young trees, we must guard them against even the slightest movement; otherwise, the young rootlets and fibres, which play so important a part in nourishing the tree, are destroyed by the continual shaking. We must, therefore, distinguish between stakes which are used to train, and those which serve the purpose of props. A large number of expedients have been invented for supporting trees; one of the most effective and simple of which is shown at fig. 40. We plant round the stem, in an oblique direction, three or four short, strong stakes, at about 16 in. to 20 in. from the root of the tree; they are then tied firmly to the tree by means of osiers, cord, or wire, a piece of cloth being interposed to prevent chafing. They may be joined at their lower extremities by cross bars, which will add much to their firmness, and Thorns, Brambles, or Furze, may be thrust in between the tree and its supports to ward off the attacks of cattle or sheep upon the young bark. This kind of support has many advantages. The struts effectually prevent the trees from being shaken by the wind, no matter how strongly it may blow; the trees are never disturbed by the attacks of cattle, and the soil round the roots is protected from being trodden down, which is a great advantage. Besides this, we avoid the use of straight stakes for training the tree, which always, more or less, injure the roots, on account of its being necessary to insert them close to the tree itself. Besides this, a straight stake, except it be exceptionally strong, can never keep a tree perfectly immoveable. Care should be taken to provide supports of this sort for all trees, whether they have training stakes or not. It is easy to keep cattle from rubbing themselves against the trees when they are planted in pastures, by surrounding the stems with lathes, into which several sharp nails have been driven.

Newly planted trees are also exposed to numberless other vicissitudes. The sun and wind dry and split the bark, and harden it so as to check the circulation of the sap. This evil may be at any rate diminished by anointing the tree at the time of planting with a kind of paste, composed of cow-manure, clay, and a little chalk. The whole should be bound with straw placed lengthways, and not twisted round the stem. If large numbers of gnawing animals, such as hares, rabbits, &c., are in the neighbourhood, twisted straw may be rolled round the first layer on the lower part of the stems, as high as is necessary to ward off their attacks. If the stem has already felt the effects of strong sunshine, two longitudinal incisions ought to be made in it before covering it up. The straw ought to be removed every three years, if it be found necessary to protect the stems beyond this time. Generally speaking, the straw may be stripped off during the September of the second year, and the stems well whitewashed. The roots also suffer from too much sun, as well as from too much cold, especially in dry and sandy situations. It is therefore necessary to cover them at least during the first year with a layer of straw, or, what is better still, long stable manure. This covering may be changed every year about the autumn. If stable manure be used, it will protect roots against frost, and if dug in as the spring comes on, it will favour the growth and fruitification of the tree. If the trees are old, and the roots spread a long way, the manure should be buried in the place where it is supposed that the extremities of the roots are to be found. Liquid manures and perhaps spent rape cake may also be used in the same manner. These are the best manures to give to fruit trees of this kind. As soon as the leaves begin to appear they should receive the first watering, which should be renewed several times during the summer, whether they are young trees in full bearing or whether they are in a weakly condition. Attention must be paid to the way in which the trees are, whether with plain water or liquid manure. The liquid manure ought to be spread as far round the tree as possible, the amount being greater in proportion as the tree is older. A channel or hole cut near the stem for the reception of the liquid would only lead to mischieveous results. Nature ought in this case to serve as an example, the crown of the tree acting as an umbrella, which keeps the soil dry for a certain distance round the trunk; in fact, it confines the rainfall to the exact place where the rootlets of the tree are waiting for the refreshing and fertilizing shower. In old orchards which are ramified in all directions by tree roots, a layer of farm-yard manure should be spread about in the autumn, and allowed to remain until the spring, when the remaining straw may be taken away, the soil having absorbed all the soluable material. In the winter, the whole of the orchard may be well watered with liquid manure, and afterwards dressed with good soil from a meadow, or the compost described in the section on planting. It will seem strange to many growers that the roots require air for their nourishment, as well as water and manure. We must, therefore, in planting be careful to keep the roots as near the surface as possible, so that the air may take effect on them. We must also keep the earth well stired from time to time, and in new orchards clear all weeds and Grass away for the first three years. By this means we also destroy great numbers of insect pests. These operations should be performed once or twice a year according to the consistency of the soil. It is hardly necessary to remark that thsse operations must be performed so as to avoid any injury to the roots themselves. Many growers neglect these matters, and it is for this reason that so many young trees die off or take two or three years to establish themselves. Young trees in nurseries receive all these attentions, but when once they are planted in the orchard they receive no more attention.

Diseases.—By strictly observing the above directions, many diseases may be avoided; but, in spite of all possible care, the trees are always liable to accidents, on account of their living, so to speak, under artificial conditions. This is not so much the case with fruit trees, which are less frequently attacked by disease than others. It would be useless to detail all the futile remedies applied to sickly trees. One of the most common causes of disease is the bad state of the soil, which frequently induces a kind of jaundice. Trees attacked by this disorder, although they increase in size somewhat slowly, produce pale yellowish leaves. If the evil be not attacked at once, it becomes worse every year. The disease is the result of several causes—a damp, cold soil, for instance, in which the roots do not fulfil their proper functions, and absorb too much water, and become covered with a white mould. Good drainage and planting on mounds are the best preservatives against this fatal disease. The second cause results from the contrary state of things; that is to say, very high or sandy situations, which dry to a great depth during the summer, or which are too much drained by the lower ground. Another fruitful cause of the evil is found in heavy, clayey soils, into which the air cannot penetrate, may be also placed in the same category. The remedies to be adopted in all three cases are too evident to need description; they are drainage where the soil is damp, cold, and heavy, and the copious application of stable manure, straw, and frequent watering where it is too dry and porous. In the third case, the soil should be opened from time to time, and the surface kept clear of weeds and Grass, so as to favour the passage of the air to the roots. If the leaves do not speedily re-assume their natural tint, they may be watered with a solution of green copperas (sulphate of iron) of the strength of 1 oz. to a pailful of water. The solution must be made fresh and fresh, as it loses part of its properties by keeping.

Canker.—This disease causes great ravages to pipped fruit trees, especially to Apples. In stone fruit trees this disease is known under the name of gumming, and does serious mischief if not checked. It is generally caused by the soil being too damp, and manifests itself first in the roots, and then in the branches, upon which scars and crusts make their appearance, and increase rapidly. The best remedies consist in ameliorating the condition of the soil by trenching, or any other method of drainage. Here again we must insist on the advantages of shallow and mound planting. The disease is often the result of wounds, too abundant pruning, or the injuries inflicted by insects. When the branches or stem of a tree are wounded, the dead wood should be cleared away, and the part well covered with either grafting wax, or some similar composition. Grafting wax would be too dear for large work. The following is an old English receipt for a cheaper composition:—Cow manure ten parts, plaster of Paris ten parts, firewood ashes ten parts, and sand one part. This composition hardens, completely resists damp, heat, and frost, and may be prepared by any one for a mere trifle. A tree may, however, be so deeply cankered or wounded as to render recovery almost hopeless, from the difficulty of closing the wound. In such cases it should be cut slanting both upwards and downwards, thus—∧ as the new wood will grow better when treated in this manner. ∨ It is as well to cover up the composition with straw. If the trees be very valuable, wounds may be closed by inserting two large grafts between the bark and the stem, both above and below the wound, at ¾ in. apart. This method is recommended by M. Fooney, Professor of Aboriculture at the Jardin des Plantes, and although it has not yet been extensively tried, it seems to promise success. Trees which are completely hollow should be well cleaned out, the aperture filled up with rubbish, the whole being covered up with the composition described above. Some people use coal tar for stopping bleeding shoots and for covering wounds, but it is not to be recommended, especially for young trees. Large numbers of Poplars and other soft-wooded ornamental trees have been killed by its use; it should only be employed for hard-wooded forest trees. It may be used, in case of necessity, for Apples, Pears, Walnuts, and Chestnuts, but only on wounds which have resisted all other modes of treatment. Even as a last resource is it better to use ordinary oil paint, made very thick, which will often succeed when all else fails. Besides these diseases, trees are also attacked by other disorders, some of which originate in old age or premature decay, while others result from the numerous accidents to which trees in orchards are liable. We may instance failing vigour, which causes the leaves to fall before their proper time, as well as rottenness, which is due to the same cause. This disease consists in the drying up of the extremities of the branches. Cutting back to the healthy wood, manuring, or renewing the soil are the best remedies for this disease, provided it is not caused by natural decay.

Insects.—It would be impossible to describe the infinite number of insects which attack trees. The best means of prevention or cure are applied with difficulty when the orchard is on a large scale, and are often insufficient, and even useless. We will therefore only speak of those insects whose ravages are to be dreaded, and against which we may protect orchards more or less effectually. *Coccus or Chermes.*—These are as large as a grain of Wheat, but flatter, and the eggs are covered with a conical shell; they attach themselves for part of their life to the bark of Pear and Apple trees, suck the sap, and give rise to rottenness and canker. They should be destroyed when in their dormant state, for, if the eggs are allowed to hatch, the insects escape and form fresh broods. Before the sap begins to rise, the branches attacked, which are generally within arm's length, should be cleaned with a stiff brush, after which they should be well washed with a solution of soft soap and lime mixed with Tobacco water, a decoction of Alder or Walnut leaves, or gas liquour. Trees planted in close situations are the most subject to this plague; this insect is met with much more frequently in gardens than in orchards. *Woolly Aphis.*—This fly is the most destructive of all; it collects on the trees in woolly patches, having the appearance of white Moss. They principally attack the Apple tree, giving rise to nodosities which develop into canker. The best mode of destroying them is by cleaning the bark with a stiff brush dipped in a solution of potash, to which a few drops of petroleum have been added. When there is reason to believe that a new plantation has been attacked by these pests, the roots should be well soaked with a solution of potash mixed with lime water, as the new generation of these insects is always found in the roots. This destructive plague seems to increase year by year, and now-a-days few orchards are free from its depredations. Trees planted in an open situation, and in a good soil, are less liable to the attacks of this insect than others. *Caterpillars.*—The different species of caterpillars are simply endless. In spring the cocoons, which shelter the pupa, should be destroyed wherever seen. Several species cover themselves and the buds of the tree with a web; they may be destroyed with coal tar under the precautions given above, or removed by means of the *supprime échelle.* Once the caterpillars are hatched, they must be caught and destroyed, either by syringing the trees or by beating them into a sheet spread upon the ground for the purpose, destroying them by crushing, or, better still, by burning them. *Maggots.*—The most destructive of all maggots is the white worm or grub of the cockchafer; these pests gnaw the root-bark of young trees, and commit fearful havoc on both fruit and forest trees. The worms should be dug up wherever suspected, and the perfect insect should be destroyed during the summer. Beetle grubs are also very destructive to the wood and bark of fruit trees, hollowing them out secretly and doing great damage before they are discovered; even the strongest trees yield to their attacks. Removal of the bark as far as they have penetrated, and a plentiful application of milk of lime, are the best remedies. The magpie is the natural enemy of these worms, and should be encouraged. Mole crickets are also great plagues to the orchardist; happily, on this side of the channel, they are less frequent than on the Continent. The strongest allies which the orchardist possesses are to be found amongst the feathered creation, and will often rid him of a number of pests which he is otherwise powerless against. He should therefore do all he can to encourage such true friends as the linnet, the sparrow, the thrush, the starling, the goldfinch, and a number of other birds who feed greedily on insects. There are other members of the animal kingdom which do good service, and which should be protected and encouraged by the orchardist, such as lizards, frogs, toads, bats, hedgehogs, moles, spiders, gold beetles, dragon flies, &c. Ignorant persons are often in the habit of destroying certain useful animals, either through not knowing better, or through repugnance, or because they do some small amount of damage which is counterbalanced a thousandfold by the good they do. Some insect destroyers, such as the sparrow, become destructive when they breed in too great quantities; such doubtful friends should be thinned, but not entirely destroyed. The mole, for instance, is pursued by most cultivators with relentless cruelty, but it must be remembered that he helps the growth of trees by the tunnels which he burrows amongst their roots, as well as by destroying immense quantities of grubs, white worms, mole crickets, &c.; he can do but little harm and much good in the fruit garden and orchard. It is an erroneous notion that the mole gnaws the roots of fruit trees.

(To be continued).

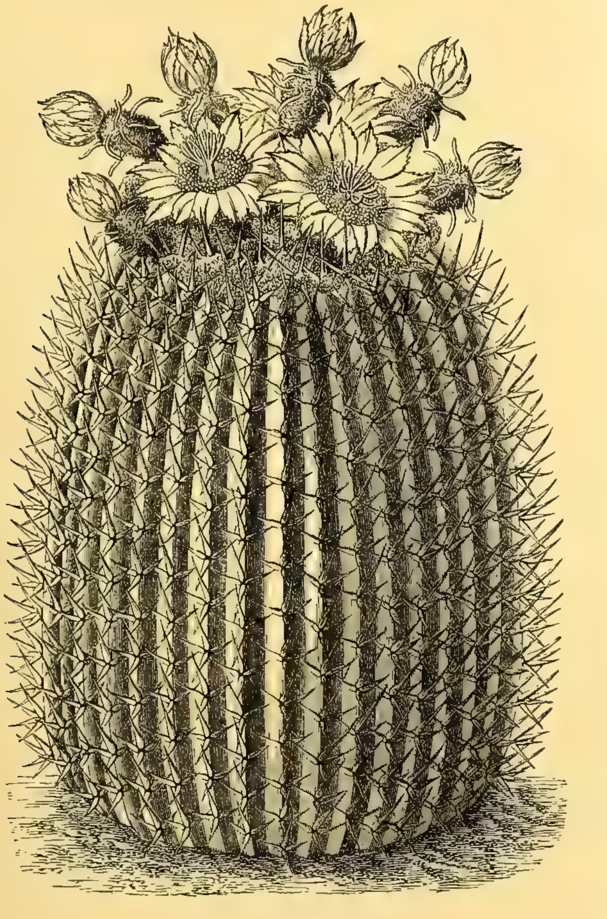
Preserving Grapes in Bottles of Water.—I have often thought that if those who recommend this mode of keeping Grapes throughout the winter would not give such elaborate instructions about the "Grape-room," more of us would be induced to try the system. We have no finely fitted-up Grape-room here, although there is a suitable house and plenty of material at hand, and yet we keep Grapes, even tender-skinned ones, successfully in bottles of water. The place in which we keep them is an ordinary room, round the walls of which are several shelves about 9 in. wide, and to each of these is fixed an upright board about the same width. Along the top, every 4 in. apart, is cut a notch 1 in. wide and 1 in. deep. Quart wine bottles are set along the shelves as closely as they can sit; each bottle is filled with water, into which are put a few pieces of charcoal, and laid in a slanting position, with the necks in the notches just alluded to. This is a simple way of erecting a Grape stand, but it answers admirably. Each bunch of Grapes is cut off the Vine with about 6 in. of wood attached to it; the end of this wood is inserted into the neck of the bottle so as to be about 2 in. in the water, and the bunch hangs over the front of the upright board. The mouths of the bottles are not stopped, and the water is never changed, but filled up as it evaporates; no fire-heat is used in the room, but daylight is admitted as in the case of an ordinary dwelling. During damp, sunless days, the windows are never opened, but at other times air is freely admitted. We have had some scores of bunches of Black Hamburghs cut and bottled in this manner since the beginning of October, and not more than two berries in each have decayed during that time, all being plump and fresh, while some of the bunches left in the Vinery have lost half of their berries, and others are shrivelling; so that the advantages of bottling are very apparent. I may state that the room is kept at no given heat, but fluctuates with the outside temperature; frost must, however, be excluded.—Cambrian.

Pot Vines.—When visiting the Messrs. Veitch's Nursery, at Chelsea, a few days ago, I was astounded at the immense numbers of Pot Vines which I saw there, with canes from 6 ft. to 8 ft. long, extra short-jointed, and thoroughly ripened, being of a beautiful nut-brown colour. I have an antipathy to pot fruit culture of any kind, but the sight of such Vines made me long to have a batch of them to deal with next spring. Is it too much to ask the Messrs. Veitch to make us acquainted with their mode of culture?—W. W. H.

THE TOOTH-PICK CACTUS.

(ECHINOCACTUS VISNAGA).

This is one of the noblest of the genus to which it belongs; its bold port unmistakably asserting its individuality. Its flowers, which are produced in profusion on the woolly apex, are straw coloured, their base or ovary being densely clothed with wool. The spines, which are in sets of from eight to ten, are very strong, and 1 in. or 1½ in. long, flat, and ribbed, and make very good and perfectly harmless tooth-picks. Besides this there are also other Cacti, to which the name tooth-pick has been given by the natives, many of them producing spines fit for that purpose. The plant in question grows freely in rough sandy loam, and is moderately hardy, but I have never known seedlings of it to live out-of-doors more than a few weeks in this country. It varies in ribs from six to sixty, according to age.



Echinocactus Visnaga.

Sudbury House, Hammersmith. J. Croucher.

French Vegetables and Fruits.—M. Berenger, President of the Second Section of the Customs' Commission in France, has addressed a report to the Minister of Agriculture, calling renewed attention to the serious decrease in the exportation of early vegetables and fruits from the country. Only a few years ago France enjoyed a monopoly of this trade to North Germany, Austria, and Russia, while in 1874 the value of the exports had fallen to 30,340,000 francs; in 1875 to 18,634,000 francs, and last year it barely exceeded 13,600 francs. The principal cause of this decline is traced to the greater competition offered in foreign markets by Italian produce, which has been greatly favoured by contracts effected with the German railway companies for conveyance of such goods at special rates, and by a considerable reduction on freight on the Italian lines. The president calls attention to the unwise policy of the recent increase in the tariff of the French companies, and bespeaks the assistance of the Government, so far as practicable, to restore this important industry to its former state of prosperity.

THE GEOGRAPHICAL DISTRIBUTION OF PLANTS.

(Continued from page 479).

Climate of the United Kingdom.

General Remarks.—If we first of all examine the climatal conditions of the country in which we live, and study the general features of its flora, we shall be in a position to profitably extend our observations, for purposes of comparison, to other countries enjoying a similar or dissimilar climate. The amount of heat and the rainfall vary very much in different parts of even this small kingdom, but it is not necessary to enter into details respecting the climate of a number of different points. Moreover, there are so many quite local modifying influences at work, that an attempt at anything more than a general sketch would involve us in an unintelligible maze of figures. It is, however, very essential that in practice nothing should be taken for granted, and that a study of local diversities of heat and rainfall in connection with the soil, aspect, &c., of the land should be the basis of all operations. The United Kingdom extends through nearly ten degrees of latitude, and in the northern part there are mountains whose summits reach a height of more than 4000 ft. In round numbers the average annual temperature decreases in Central Europe one degree of Fahrenheit's thermometer for each degree of latitude, as we travel northwards, and it is also diminished by about one degree for every 300 ft. of elevation. But in Britain the rate of decrease is considerably modified by influences explained below.

Mean Temperature.—Perhaps it will not be out of place here to explain how average mean annual, quarterly, monthly, weekly, or daily temperatures are obtained, and upon what, besides a correct and uniform system of observation, their value depends and increases. The mean temperature of a day is the highest and lowest reading of the thermometer in the twenty-four hours added together and divided by two; thus, if the maximum were 80° and the minimum 60°, the mean would be 70°. For certain purposes, and where greater exactitude is required, the highest and lowest temperature during every hour of the twenty-four is taken, and the mean deduced by dividing the sum of the readings by the number of observations. In practice it is found that the mean obtained from the absolute highest and lowest temperatures approaches very closely to that obtained from hourly observations. To get the mean temperature of a week we have only to add the means of each day and divide by seven, and the same method of procedure applies to the means of months and years. Little reflection is necessary to convince ourselves that one mean, whether for a day, month, or year, is of little value beyond fixing the temperature for the particular period in question, because it may have been exceptionally hot or exceptionally cold; but if the observations are repeated year after year, we get some insight into the range of fluctuations, and, by the arithmetical process described above, we are able to ascertain the average temperature for the year, or for any given day, in the locality where the observations are made. An average of three years would obviously be of less value than an average of ten years, but the latter would pretty well cover the whole range of variation a climate undergoes. This may be proved by comparing the averages of successive decades, which will also show whether there is a decided tendency to a real change in the climate. It should be stated that all readings for this purpose are taken from thermometers protected from the direct influence of the sun, and at a certain distance from the ground. In the extreme south-west of England and Ireland the average annual temperature is 52°, with a difference of about 20° between the averages for July and January, and a difference of about 15° between the three winter months, December, January, and February, and the three summer months, June, July, and August. The average annual at Chiswick for twenty years (1852 to 1871) is 48·°7, and the average for Greenwich is about 49°, with a difference between January and July of 25°, and between summer and winter of 20°. The average winter temperature of the north-east of (mainland) Scotland is 37°, of the south-west of England 43°, and the July temperature for these localities respectively is 56° and 64°. It will thus be seen that a table of mean temperatures of Britain, constructed from the means of different parts, is of on use whatever to the practical cultivator, unless he knows how it is constructed.

Lines of Equal Heat.—The extreme figures just given will afford the cultivator some clue, but a clearer idea of the distribution of heat in this and other countries may be given by a plan devised by Alexander Von Humboldt, one of the founders of the science of the distribution of plants. It is simply connecting on a map by lines all those places enjoying the same annual or winter or summer temperature. Such lines he termed isothermal lines or lines of equal heat. If we trace the isothermal lines in Britain for summer and winter respectively, we find that they take quite different directions; thus, the winter isotherm of 37° runs from the north-east, southward down the eastern side of the island into England, receding gradually from the coast, until it reaches its south-eastern limit, then striking the midland counties, and returning northward a little west of the centre of the country, enclosing a tract of country of about the same temperature; but, continuing the line to the north-west of Scotland, it becomes 38° and 39° as it approaches the north-west coast. The general direction of the isotherms of 40°, 41°, 42°, and 43°, is from north to south on the west side of the island, bending to the south-east in their southern part, each higher degree being nearer the coast. Comparing the general direction of the summer isotherms, we see that they cross the winter at right angles, running from south-west obliquely north-east, so that the eastern side of the island is warmer for latitude in the summer than the western, whilst the contrary obtains in the winter. In the winter there is a central coldest area, extending from north Scotland to the south-midland counties of England, and in the summer there is a central area of greatest heat in the south-midland counties. In Ireland the isotherms take much the same direction, but the lowest winter is 39°, and the highest summer 62°.

Modifying Influences on Climate.—The cause of these climatal conditions is not far to seek. Proximity to the ocean engenders an equable climate, its warm currents softening the rigours of winter, and its breezes moderating the heat of summer. The North Sea modifies the climate of the eastern coast in winter, but its influence is less potent in summer.

Extreme Temperatures.—Before leaving the subject of temperatures, a word may be said respecting extremes, although extremes affect very little the profitable cultivation of plants, for which the average annual amount of heat is sufficient to bring them to maturity. But severe winters, such as we experienced in 1860-1, when the extremes of cold were very great, play sad havoc among ornamental trees and shrubs which bear our average winters without injury. Usually the vicinity of the ocean is sufficient to overcome even the extremes of cold, or to greatly modify them. For example, on the 25th Dec., 1860, at Hurstpierpoint, a little north of the Downs in Sussex, and less than seven miles in a direct line from the sea, the temperature fell to 3° of Fahrenheit, whereas at Worthing, on the coast, it did not go below 17°9, and at Helston, in Cornwall, the lowest was 32°. On the 29th of the same month, in the same year, the minimum at Hurstpierpoint was 5°, at Worthing 33°, and at Helston 28°. On the other hand, the lowest temperature at Helston in October, 1859, was 32°, and at Truro and Worthing it was down to 30°.

Distribution of Moisture.—We now come to the consideration of the distribution of atmospheric moisture, precipitated as rain or otherwise. The extremes of the average annual fall of rain in different parts of the kingdom are much greater than in the temperatures. In the south-eastern part, in Essex, not far from the centre of the greatest summer-heat, and where there is a maximum quantity of sunshine, the average annual fall does not exceed 22 in.; at London, it is about 24 in.; at Manchester, 36 in.; and at Seathwaite, in Cumberland, as much as 140 in.; and on the opposite eastern coast of the same county it is only 20 in. But it is not so much the quantity of rain that falls as the proportion of sunny days that influences the maturation of grain and seeds. Our average autumn weather, except in a few favoured places, is not favourable to the profitable production of many kinds of seed, which ripen freely and with little care in the same latitude on the Continent. General comparisons with the climates of other countries will be made when treating of the plants of the different zones.

Vegetation of the United Kingdom.

Definition of a Flora.—The vegetation of almost all countries, which, collectively, is termed the flora, consists of two elements—an indigenous, and an introduced. This fact should always be kept steadily in view in studying the distribution of plants, especially in countries like our own, where the cultivation of exotic, useful and ornamental plants, has been practised for centuries. It is necessary to distinguish between the agencies which have effected the existing conditions, and to define which are to be regarded as natural, in opposition to the artificial. Any species owing its existence in a certain country, or region, to the voluntary or involuntary interposition of man, is an exotic introduced by an artificial agency, whether it be wild and flourishing as well or better than species belonging to the aboriginal vegetation, or whether it be directly under cultivation. The indigenous species, on the other hand, include all the rest, whose presence may be due in the country either to creation, migration step by step, conveyance by wind, birds, or animals of any kind—in short, whose presence is due to any natural cause whatsoever. This definition would be open to criticism, of course, if by aboriginal or indigenous vegetation we limited, or attempted to limit it, to those species actually created in the country. It has the advantage that it involves us in no speculations as to the origin of species, and leaves us to consider their presence independently of all theories. Probably the flora of no other country in the world presents so many difficulties to the botanist, who seeks to refer its components to their respective categories of indigenous and exotic; but by studying the general distribution, as apparently uninfluenced by man, of each species, one is able to arrive at the probabilities of its nativity or otherwise. Most botanists agree in regarding the common Elm (Ulmus campestris) as an introduced tree, and the circumstance that it never (?) ripens seed in this country supports this view, though it does not prove it.

Number of Species.—The indigenous flora of the United Kingdom numbers, according to a moderate view of what constitutes a species, about 1428 species; but Mr. Beatham, at one extreme, admits only 1285, whilst Professor Babington at the other, raises the number to upwards of 1700. This greater number is mainly owing to the fact that numerous forms of the Water Buttercup, Bramble, Rose, Hawkweed, Willow, and a few other things are regarded as species. In this, as in all other figures given, the lower Cryptogams are excluded. Taking the number of 1428 as our standard, we find they belong to 463 genera, and 90 Natural Orders. The following are the Natural Orders most numerously represented:—Compositæ or Aster family, 120 species, belonging to 42 genera; Gramineæ (Grasses), 100 species, 43 genera; Cyperaceæ (Sedges), 75 species, 58 of which belong to the genus Carex; Cruciferæ (Wallflower family), 70 species, 24 genera; Leguminosæ (Pea family), 65 species, 17 genera; Umbelliferæ (Parsley family), 62 species, 34 genera; Scrophularieæ (Antirrhinum family), 50 species, 13 genera; Labiatæ (Salvia family), 48 species, 17 genera; Caryophylleæ (Pink family), 44 species, 12 genera; Orchideæ, 37 species, 17 genera; Ranunculaceæ (Buttercup family), 34 species, 10 genera; and 40 Ferns, belonging to 17 genera. These twelve Natural Orders include 257 genera and 745 species, or more than half of the total numbers, and may be termed characteristic groups.

Proportion of Woody Plants.—The proportion of woody to herbaceous species in our flora is remarkably low, numbering only about 100, including every species that has woody, persistent branches, no matter how small it may be, such as Rock-rose, Milkwort, Whortleberry. Upwards of thirty of them, indeed, are under shrubs, or quite dwarf shrubs; about forty are larger shrubs, or quite small trees; and thirty are trees of moderate or large size. At least a third of the woody species are rare, or only locally abundant, and very few extend to every county in the kingdom. Three species of Heath, Erica Tetralix, E. cinera, and Calluna vulgaris, are amongst the most ubiquitous of shrubs, covering large tracts of uncultivated land from north to south, the first and second ascending to above 2000 ft., and the third to 3000 ft., in the highlands of Scotland. The Blackberry, in some of its innumerable variations, is common almost everywhere; several of the Willows, too, are common and widely spread; and the only indigenous evergreen climbing shrub, the Ivy, is pretty general. The Dog Rose, and some other forms, extend from north to south; and, finally, Furze or Gorse, is a characteristic shrub on waste ground in all, except the coldest, parts of the kingdom. The most widely and generally dispersed of trees is the Oak.

Enumeration of Trees.—The deciduous trees are:—One Alder, 1 Ash, 1 Blackthorn, 1 Birch, 1 Beech, 1 Cherry, 1 Elm, 1 Elder, 1 Hawthorn, 1 Hazel, 1 Hornbeam, 1 Lime, 1 Maple, 1 or 2 Oaks, 2 Poplars, 5 species of Pyrus (Crab, Mountain Ash, &c.), and 6 Willows. The Lime and some others are rare in a wild state, and doubtfully indigenous; and several, as the Hazel and the Thorn, rarely form trees. To these may be added five evergreen trees, namely, Arbutus (locally in Ireland), Box (possibly indigenous to Surrey, very rare elsewhere in an apparently wild state), Holly (the only common species of the five), Scotch Pine and Yew (both rare in a wild state now). Among noteworthy shrubs we may name the only deciduous climber, Clematis Vitalba; the solitary twiner, Honeysuckle; the only shrubby parasite, Mistletoe; and the only indigenous Monocotyledonous shrub, Butcher's Broom.

Annuals.—The herbaceous vegetation includes a considerable number of annuals, more or less abundant in cultivated grounds, which may or may not be indigenous. Among familiar examples of annual plants may be named the Poppy, Papaver Rhæas; Charlock, Brassica Sinapistrum; Shepherd's Purse, Capsella Bursa-Pastoris; Chickweed, Stellaria media; Shepherd's Needle, Scandix Pecten-Veneris; Mayweed, Anthemis Cotula; Knotgrass, Polygonum Aviculare; Goosefoot, Chenopodium album; and Black Grass, Alopecurus agrestis. The desire to keep these articles within reasonable limits compels us to omit many interesting details of the distribution of some of the rare perennials. How some are limited to almost a single locality, others to two or three isolated and distant spots, and so on. We may, however, before bringing this part to a conclusion, quote some statistics from Mr. Watson's works on this subject.

Analyses of the Flora.—This gentleman has devoted almost a lifetime to the study of botanical geography, and more particularly to the elucidation of the laws of the distribution of British plants. He divides the whole of Britain into six zones of heat, depending upon latitude and altitude. In the three lower zones cultivation of cereals and Potatoes is general or practicable. The upper boundary of the third zone has much the same climate as the Arctic circle at the level of the sea; and there is a comparatively small area of surface in Britain above this, it being limited to the peaks and ridges of the mountains in the north. Taking these zones in the order of the greatest to the smallest amounts of heat, the number of species in each is—Inferagrarian zone, 1225 species; Midagrarian, 1070 species; Superagrarian, 760 species; Inferarctic, 293 species; Midarctic, 244 pspecies; and Superarctic, 111 species. Of the total number of species found in Britain, 532 are generally diffused at sea level from north to south; 606 do not reach the northern latitudes or ascend into the mountains; 238 are of a northern or mountain type, and 49 are too local in their distribution to be referred to either class. On the summits of the highest mountains in the north, the vegetation is of a purely Arctic or Alpine character, and in the milder parts of the southwest of England and Ireland are found several species characteristic of the south-west of Europe. Some of the plants characteristic of a warmer climate are Trichomanes radicans, Trichonema columnæ, Erica vagans, E. ciliars, E. mediterranea, Arbutus Unedo, Neotinea intacta, Dabœcia polifolia, Saxifraga Geum, and Pinguicula lusitanica.

Number of Species on a Small Area.—After having given the total number of flowering plants for the whole kingdom, it may be interesting to give the number found on a small area, that has been very carefully botanised by three or four different persons, and on which the writer of this spent nearly two months. In Rothamsted Park, Herts, Dr. Lawes has had about 7 acres of meadow land, divided into about a score of plots, under experiment for upwards of twenty years. On the whole area about eighty different species occur, a fourth of which are comparatively rare. On one of the plots, ¼ acre in extent, which has received no manure during the whole period of the experiments, sixty of these species occur; and on an adjoining plot, highly manured with artificial manures every season, and which yields a quantity of Hay equal to at least 5 tons per acre annually, the number has been reduced to eighteen. This is interesting and instructive in its aspect of a struggle for existence. The number of different Grasses found on the experimental ground is only eighteen, and they all occur on several of the plots.

No Plant Limited to the United Kingdom in its Distribution.—In conclusion of this part, and as introductory to the next, it may be mentioned that not one Natural Order, not one genus, and not even a single species—in the sense that we understand a species—is endemic or limited in its distribution to the United Kingdom. With few exceptions, they occur in Continental Europe, and many of them have a very extensive area of distribution. One of the exceptions is Eriocaulon septangulare, a plant of the Sedge family, which is a North American species, that has not been found elsewhere in Europe.

Geographical Range of Some Species.—The following common British plants are examples of those found in very distant parts of the world:—Ranunculus aquatilis, nearly all temperate regions; Barbarea vulgaris, north and south temperate regions; Cardamine hirsuta, nearly everywhere in temperate and cold regions; Montia fontana, temperate and frigid regions both in the north and the south; and Duckweed, cosmopolitan. A long list of such plants might be drawn up, but it seems sufficient to mention the fact and give these examples.

Inconspicuous Flowers.—There is one fact connected with the woody element of the vegetation of the United Kingdom which cannot fail to have struck anybody who has visited other temperate countries, particularly in the southern hemisphere, or had opportunities of gaining some knowledge of the vegetion of other countries. It is this—the almost invariably small, greenish, inconspicuous flowers. Excepting the Heaths, Furze, Viburnum, Cornus, and Lonicera, almost all have inconspicuous flowers. This characteristic applies particularly to temperate Europe, and less decidedly to the whole of the north temperate regions. Already in the warmer parts of China, Japan, and North America, whence we obtain hardy plants, as well as in the Mediterranean countries, the proportion of shrubs and trees with large, coloured flowers is much greater.

Distribution of the Arborescent Genera.—The distribution of the genera to which our principal large, undoubtedly indigenous, trees belong, offers many curious anomalies. Fraxinus (Ash) consists of about thirty species, scattered over the temperate and sub-tropical regions of the northern hemisphere; Ulmus (Elm) comprises about a dozen species, confined to the north temperate zone; Populus (Poplar) about a score of species in the temperate regions of Europe, Asia, and America; Salix (Willow), a large genus, including upwards of 150 species, widely dispersed, but most numerous in the temperate regions of the northern hemisphere, especially in the Old World; several species, however, extend to the Arctic regions, and S. reticulata, which is indigenous to some of the higher mountains of Scotland, reaches the northern limits of Arctic vegetation; a few species are widely dispersed in South America, one, at least, nearly to the extreme south; in South Africa, too, there is one or more species having a wide range of distribution; there are some others in the mountains of tropical Asia, but the genus does not occur in Australia, New Zealand, and the Pacific Islands. Quercus (Oak), a genus of some 250 species, dispersed over the temperate and sub-tropical regions of the northern hemisphere, extending to the southern hemisphere in the mountains of Java, and perhaps also in America; Fagus (Beech) consists of about fifteen species, the distribution of which has already been explained in the introductory remarks; Betula (Birch) is a genus of about twenty-five species, which inhabit the temperate and frigid countries of the northern hemisphere; Alnus (Alder), fourteen species, dispersed over Europe and Asia, from the Himalaya Mountains northwards, North America, and Andes of South America southwards to Chili; and Pinus (Pine or Fir) comprises upwards of 100 species, found in the temperate and sub-tropical regions of the northern hemisphere, from Borneo and Mexico to the Arctic circle. One noteworthy fact in connection with the distribution of the genera of British timber trees is, that only one of them—Salix—reaches the mountains of tropical Africa and the temperate regions of South Africa.

W. B. Hemsley.

PROTECTING HALF-HARDY PLANTS.

Extremes of temperature act in various ways upon different plants. Those whose natural home is on the mountain side, suffer more from damp than cold or frost, when moved to moist valleys; hence the importance of knowing as much as possible the conditions under which all new reputedly hardy exotics exist in their native countries. Many a hardy shrub and plant has been lost from a want of this knowledge, and a little intelligent attention until it had become thoroughy established. I have known instances in which a small potful of dry Fern over the roots and collar of a plant turned the scale between life and death, in favour of the former, when put on just at the right time. Many plants of whose hardiness in any particular locality we may have doubts, if planted on a well drained elevated site, with a little light protection over their roots for two or three winters after planting, would there become acclimatised and do well. Perhaps with recently planted shrubs or plants there is nothing more important or necessary than temporary shelter from cutting winds; too often this is left till the leaves begin to drop and turn back; but to be thoroughly effective the shelter should be put in operation when the planting is finished; and the simple expedient of lacing a few branches through stakes driven upright in the ground, on the windward side, is generally as effective as anything. Shelters need not be wind-proof, if they break its force, sift it as it were, they will answer the purpose better than if quite close. Hollyhocks of choice valuable kinds, growing in cold positions, should be taken up, potted, and placed in a cold pit, or they may be laid in closely together in some warm corner where they can be sheltered with a few branches, when the frost and snow comes, and which, according to the weather prophets, we are to have this winter. Fuchsias and Dahlias may be covered and kept safe with cones of ashes. I have sometimes lifted them and preserved the roots in a mound of ashes, and planted them again in spring, dividing the Dahlia roots to one eye each. Cannas keep better in the ground covered a foot deep with leaves and litter. In dry soils, tuberous Begonias may be wintered in the same way. Many of these, before their proper culture was understood, were killed by being kept too dry and warm in winter.

In cold situations, it is best to take up Tea Roses carefully and plant them thickly in some sheltered border, laying them in sideways, when they can easily be protected, or have some old lights placed over them. In the event of a severe winter, they will be secure, and this will give an opportunity to have the beds or borders manured and trenched up, which will be of immense benefit to them when planted again in March, or when the weather is settled. It is never desirable to begin protecting anything too soon. Protection should always be looked upon as a necessary evil, but still as an evil nevertheless. A few degrees of frost never hurts anything that is capable of standing our climate at other times, and there are always some premonitory signs, giving notice of the approach of a severe frost, which are well enough known to those who are in the habit of closely observing the state of the weather. It is after the first night's frost has dried up the damp surface and made locomotion cleanly, that protection should have attention, by setting all available hands to work, and having all things made safe and comfortable. I am speaking now more especially of plants that are fairly hardy. Dahlias, Cannas, and Begonias had better be made secure at once, and so must Tea Roses if it be intended to lift them. I need not say that the protecting material should be ready somewhere handy when wanted. Fern, if it be available, should have been cut and stacked ready. Reeds or Rushes make excellent protection, because they do not altogether exclude air; branches or cuttings of evergreens are also useful, and dry leaves, if their tendency to blow away can be overcome, are equal to anything.

In the vegetable and fruit departments, many things will require attention on the approach of frost—Celery, Artichokes, Broccoli, Endive, &c. Freshly-planted fruit trees, and, indeed, all fruit trees the roots of which are close to the surface, will be benefited by having a slight mulching placed over them. The roots of a plant are of a softer nature than the branches, and, if frozen through, the vessels or cells may be ruptured, circulation stopped, and the tree or plant receive serious injury from their inability to perform their natural functions. When plants have been covered or sheltered on the approach of severe weather, defer the uncovering for a day or two after the weather has finally broken up, in order to avoid sudden changes.

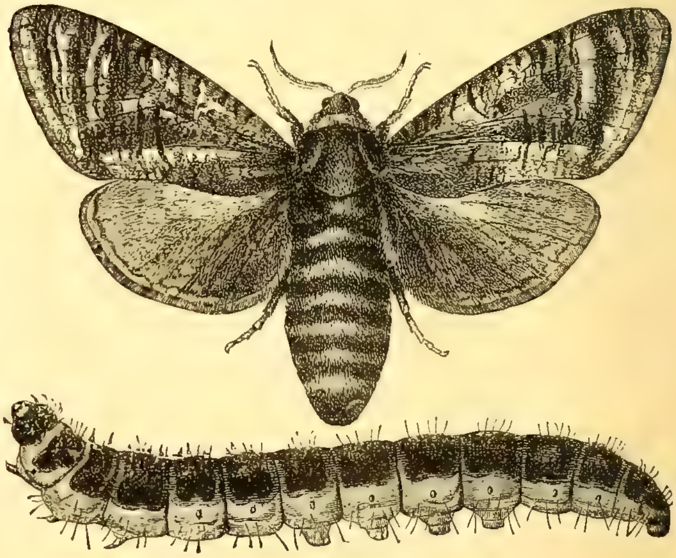
E. Hobday.

THE GOAT MOTH.

(COSSUS LIGNIPERDA.)

This insect, there is little doubt, continues to spread in the neighbourhood of London—a whiff of the strong goat smell, to which it owes its name, striking the sense in very many plantations in the western suburbs. We may note that the more we know of it, the greater the number of trees we find it attacks. In an article on it (see Vol. III., p. 203), we noted the various trees that it attacks, and among these the Oak. The cases, however, in which the Oak suffers are comparatively rare, and we therefore mention a striking instance of a whole row of bleached and barked dead Oak trees which we saw sometime since in a field not very far from Red Hill, which owed their death entirely to the attacks of this insect, as was evident from scars on the wood. They were pointed out to us by Mr. John Clutton, on whose property they stood; and he was good enough to cause another to be cut down at some distance, which was also dying under the attacks of this insect.

A. M.



The Goat Moth and Caterpillar (natural size).

Preserving Turnips in Winter.—Severe frost injures the tissues of almost all vegetables, and, with one or two exceptions, spoils their flavour and destroys their keeping porperties, when thawed again. When Turnips are grown in drills, and have room enough, it is a good plan to draw a little earth up over the roots with the hoe on each side the rows, but this need not be done till just before frost of a severe character is expected. This will, in a great measure, prevent that alternate freezing and thawing that does so much injury, as the plants may be pulled up intact just before frosts sets in, and be laid in shallow trenches, just burying the bulbs. They will keep in good condition for a long time in that way. A few should, however, always be stored away in some cool place to be at hand in bad weather.—E. H.

REPRODUCTION OF LILY BULBS.

The act or process of reproducing that which has been destroyed is, with respect to the cultivation of the Lily, well worthy of the careful consideration of all Lily growers; more especially, as we see at the present time, that opinions differ most widely with regard to the wonderful operations of Nature in the reproduction and increase of these deservedly-popular plants. We are told that a new bulb, whether grown from seed or from bulblets, takes not less than three years, under the most favourable circumstances, before it develops a flower-bearing stem. We are also told, that raising seedling Lilies is a long process, as one must wait from three to ten years ere they bloom. And we are, moreover, taught to believe that it is the very same seedling, or bulblet, that grows year after year, larger and larger, until it becomes a flowering plant, and that the bulb then goes on living for an indefinite number of years, sending up each year a flower-stem from its centre. This may appear to many to be a very plausible doctrine; but how it has become the belief of so many Lily growers is difficult to understand. If we lift a clump of Lily bulbs, we often find a whole colony of small bulbs, popularly, but without discrimiantion, called offsets. When we carefully examine them, however, we find they are not all real or genuine offsets, but that they consist of offsets, and the offspring of offsets, properly called successional bulbules. A genuine offset is not furnished with all the characteristics of a fully-developed bulb, but, though deficient in some respects, it is possessed of this important function, namely, the power of generating a successor in the shape of a bulbule or small bulb. With respect, therefore, to the powers of reproduction, it is important to bear in mind, that plants, no more than animals, come into existence without a parentage. An offset no larger than a Pea, may, during the ensuing summer, send up above the soil a slender stalk a few inches in length, bearing what may be called a seed-leaf. But this identical offset will never send up another stalk. This becomes the duty of its offspring—the successional bulbule. Nature causes this operation to be repeated, season after season, each successional bulbule growing larger than its progenitor, until a fully-developed flowering bulb is the result. If any of the successional bulbules be carefully examined, it will be seen that the stalks or stems of the preceding season did not emanate from them. De Candolle has said:—"If we desire to know more of plant life in its higher bearings, we must live with, and observe the cycle of plant growth in all its stages, from the germination of the seed to the full development of the fruits." For myself, I can truly say, that I have almost literally complied with this injunction. For many years I have lived with, and have been in the habit of watching the underground life of the Lilly, from the most minute seed-bud and the smallest offset, to their full development as flowering bulbs, and even after that. In order to do this satisfactorily, I have planted, from time to time, in distinct places, hundreds of offsets, as well as fully developed bulbs, and have watched their progress, winter and summer, by taking up a portion now and then for examination by dissection or otherwise. The result of this has been to me full confirmation that no individual offset, bulbule, or fully developed bulb lives for another season, after having once sent up a stalk or a flowering stem. Take a bulblet in the autumn, that has been produced on a bulb-bearing stem, and carefully cut it open. At the very core will be found a seed-bud, in every respect similar to one that will be found in a flowering bulb, in the axil formed by the inner scale and the base of the flower-stem. In the case of the bulblet, it will take more than three years before its successional bulbule is sufficiently developed to throw up a stem that will bear even one flower. In the other case, the seed-bud, which is contained within the flowering bulb, will take not more than twenty months before it blooms, possibly more perfectly than its parent did before it. How is this? The seed-bud in the fully developed bulb is nourished by that bulb as its parent, and its growth is consequently so stimulated that in eight months from its germination it is shooting down strong, healthy roots, 3 in. or 4 in. in length, mixed up with those of its parent, and through these its own roots, it receives additional nourishment, while the parent bulb continues still to nourish its offspring for some time longer. All this time the little bulblet is left to starve or provide for itself. What can it do, for it is still alive? In order to preserve its life, Nature directs it to send down two or three slender feelers in the shape of thread-like roots, in search of such food as the soil can supply, and such as is fit for it in a young state. Its further progress until—not it, but its successional bulbule has arrived at a state of full development—I have already described when treating on the progress of an offset; for an offset, if carefully dissected, will also be found to be possessed of a similar seed-bud. It is from a careful study of this part of the subject that we learn that an offset or bulblet has to go through a distinct and different stage or transformation every year for a length of time before it can arrive at the stage of being a fully developed flowering bulb, whereas the seed-bud in the flowering bulb, which is generated in the autumn, will, in eight months, be sending down strong roots; in two months more it will be nearly of adult size; and in six weeks from this time it may safely be detached from the decaying remains of its parent, and transplanted, if necessary, where it will bloom next summer. The rapidity of growth in the new bulb is not generally known, and has therefore given rise to very mistaken notions on the part of those who dip little deeper than the outward appearances of the bulb.

If I thought that I was making the columns of The Garden a medium for the promulgation of erroneous doctrine—mere fancies of my own—I would never write another word on the subject of the Lily. When, therefore, giving the result of my experimental researches for the use of those who may be inclined to adopt or test them, it is not very encouraging to be told, as I have been, by the author of "Notes on Lilies and their Culture" (p. 268, April 7), that "though it is impossible for him either to deny or accept my statements as facts, he thought I could hardly expect many Lily cultivators—out of some hundreds who are interested—to sacrifice some dozens of bulbs in the pursuit of science." Why not? I am, myself, but a mere amateur investigator, and they, according to his own account, who would not sacrifice a few bulbs for the sake science, number some hundreds! The author, who is himself a cultivator on a large scale, as a matter of commerce, and besides a teacher of Lily culture, might surely have considered it a duty to sacrifice a few bulbs in the pursuit of a science which is so intimately connected with his profession. But no! Instead of doing this, he laid down for me a most inconsistent and impracticable programme. He said:—"I want to know, is 'Dunedin' right or wrong? The onus of proof lies on his shoulders; I therefore propose to him to prove it thus to the horticultural world. Let a series of preparations, sections of bulbs showing the seed-bud in its several incipient, semi-developed, and fully-developed stages (in fact, the life history of the 'seed-bud'), be put up in spirit or some other antiseptic fluid that will keep the specimens in a fresh, undecomposed condition for months at least, by 'Dunedin,' or under his supervision and labelled with clear descriptions, so as completely to illustrate the views advanced, and let these be exhibited before the Royal Horticultural Society, and there explained by 'Dunedin,' and afterwards be on view for a time in London, or be presented to the Museum at Kew, so that all interested may have an opportunity during the summer of familiarising themselves with the appearances on which these new views are based. Typical bulbs from each of the various groups of Isolirion, Eulirion, Martagon, and Auxilirion, in their various stages of development, should be exhibited, as these groups materially differ in their appearance, growth, and treatment under cultivation." To all this, he added:—"If 'Dunedin' will do this, he will render a great service to science as well as to Lily cultivation."

As these unique instructions for my guidance were published in The Garden on April 7, I trust they will again be permitted to appear on this occasion, simply as a setoff to the views I have continued since that time to make public. To show, further, that I am actuated by no unkind feelings, I propose to bring this paper to a close by attempting to clear up one or two passages in his "Notes on Lilies," in reference to which he himself seems to be somewhat doubtful. At p. 5 the author says:—"Lilies may get their stems eaten off, injured, or destroyed in various ways, or from some cause may lie over [or "remain dormant,' as amended by "F. W. B.,"] and not emit shoots; but are the bulbs damaged? Not so; the roots at the base of the bulb are put forth as usual, and the bulbs grow—perhaps even the more so, because there is no stem to draw nourishment from them." In a note, at the foot of the page, he adds:—"We could relate an instance of this where no growth was made aboveground, but the bulbs which had been supposed to have perished (having made no sign), were in the autumn found much finer ["much larger," as amended by "F. W. B.,"] than when planted." Now these two passages, though written by the author of "Notes on Lilies," and afterwards amended by "F. W. B.," rest upon mere theory without a single experimental fact to support them! At p. 349, Mr. Baines very truly remarks that the common White Lily should not be removed in October, "as it will be making active growth, and, if the roots be disturbed, it will have the effect of wholly or partially preventing its flowering next year." We have here a case in point. If the White Lily be removed in October, the green tufts of leaves which it then produces will, in a great majority of cases, flag and die down; but the bulb will not "lie over," or "remain dormant," as the author and "F. W. B." supposes. A Lily bulb is never dormant; for, if not entirely dead, it is either growing or decaying. Those who believe in the dormant theory, can know very little indeed about the underground life of Lilies. From the moment the seed-bud is generated until it has bloomed it is always in a growing state; when it has bloomed the object of its growth is accomplished, and it forthwith begins to decay, and ultimately dies—stem, bulb, and roots all certainly perish, the same bulb never flowering but once. As the bulb and stem are parts of the same structural organization, one cannot be destroyed without destroying the other. If the stem be "eaten off, or destroyed," as the author of "Notes on Lilies" remarks, the bulb, of which it is a part, will inevitably die; but in general, not before it has nourished the new young bulb within it, sufficiently to enable that bulb to grow and become, in its turn, a flowering plant. This is the interregnum which the author designates as "lying over," and which "F. W. B." erroneously calls "being dormant." The parent bulb, that is, this bulb which was destined to flower during the season, having been destroyed through the destruction of its flowering stem; and as a Lily bulb flowers only once during its short existence, this identical bulb cannot now flower again, and thus a season is lost; but the off-spring of the destroyed bulb will flower the year after that; all new bulbs taking about twenty months from the time the seed-bud is generated until they become flowering plants. We have seen that the author remarks that Lilies may get their stems eaten off, or destroyed, or from some cause [unknown to him] may lie over and not emit shoots; and then he asks:—"But are the bulbs damaged?" He answers this himself, by saying:—"Not so, the roots at the base of the bulb are put forth as usual." It is much to be regretted that he should have answered his own question in so positive a manner, as he is altogether wrong. If he had made a careful examination, before publishing such a statement, he would have found that the roots were not put forth from the base of old bulb, but from the base of the new bulb, the offspring of the bulb whose stem was destroyed; and that this new bulb, is often found to be "much finer," and "larger," than the parent bulb had been before it. The author of "Notes on Lilies" has said: "I want to know, is 'Dunedin' right or wrong?" I think the best way to convince him that I am right, is to point out how he can prove to his own satisfaction that he himself is wrong. Dunedin.

Tomatoes and Coal Ashes.—Both Tomatoes and Potatoes are good this year where they have a monopoly of the soil—very good on manured lands, and phenomenally good on rich soils, which have been farther enriched by coal ashes. Having casually observed the effects of coal ashes to be, as I thought, something out of the common on Tomatoes—increasing not so much the growth of the plants as the size, smoothness, and number of the fruit produced—a market gardener of experience confirmed my suspicion, and last spring I accepted his directions for their use, which were to throw out a wheelbarrow load of earth where each plant was to stand, and then fill with half soil and half coal ashes, and therein set out the plants. I did so, and the result was quite surprising, the dozen plants thus treated bearing nearly double the fruit of others, and smoother and larger; but Tomato plants so set, will, in case of drought, require water oftener, and more of it, than those growing in common soil.—"Country Gentleman."

THE KITCHEN GARDEN.

SELECT VEGETABLES.

Amongst many kinds of vegetables which we have grown for trial, the following proved to be the best:—Among autumn Broccolies, Veitch's Self-protecting is now (middle of November) turning in for use in excellent condition. Carter's Fern-leaved Parsley is the best which I have ever seen; at a little distance off it looks like a well-grown Lycopod, and it answers unusually well for garnishing; indeed, as an ornamental culinary plant, it stands in the foremost rank. Veitch's Autumn Giant Cauliflower, raised from the remains of a packet of seed which I had last year, is unusually fine at present, and has been so for weeks; but from seed which I had this year the case is altogether different. Purchasers of seeds of this, as well as of other choice vegetables, should therefore be sure that they get them genuine. Among Brussels Sprouts, the Roseberry beats all comers, being unusually fine. Osborns' and Williams' French Beans have been the most serviceable this untoward season. Lettuces last summer were the best I ever had; the kinds were Alexandra White Cos and the true old Bath Cos, from seed which I had from a neighbour, who has saved it from his own stock for many years. This kind (Bath Cos) I cut finely blanched from the open ground the whole of last winter and as late as June; along with Batavian Endive, these were greatly valued and much in demand. The Alexandra White Cos was the largest Lettuce I ever saw; it grew hard, very crisp, and white, and nutty in flavour; it was grown on very rich ground that was heavily manured. Veitch's Red Globe Turnip has been extra fine this autumn; some samples of it, before me while I write, being very beautiful to look at, and, when cut, they are as white as snow, crisp, tender, and juicy. The best Celery, which is this season larger than we really care to have it, is represented by Turner's Dwarf White Incomparable, the seed of which was also given to me by the same grower who saved the Cos Lettuce. He has saved it for many years, and, though it has often appeared under new names, we find nothing to equal it, if from the stock which was sent out twenty years ago. M. Temple.

Impney Hall.

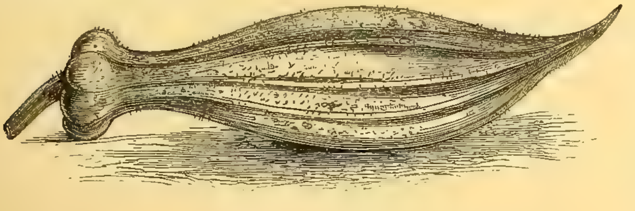
Potatoes in Worcestershire.—I have this season been more unfortunate with my Potato crops than I ever remember to have been before; in fact, the whole of the late ones were useless, and none were left for seed, all and sundry having the "dreaded mark" on them. The very earliest kinds were harvested in tolerable safety, but when the disease appeared, some time in August, it carried out its work of destruction amongst other sorts quickly and without mercy. Our collection was a good one, including some of the best sorts recommended by those much better skilled in Potato lore than I am; now they are all gone, I would be glad if some kind friend would, in the pages of The Garden, recommend me a few good kinds suitable for a strong heavy soil, moderately rich. Last year the ground was freshly broken up Grass land, and the crops were heavy, and the quality excellent, but we lost nearly all of them. I find in this locality that Myatt's Ashleaf is a favourite, that it has stood well this year, but it is hardly white enough for what is generally desired.—M. Temple.

Mushroom Culture without Manure.—It is not always that one can secure the horse manure and other necessaries to grow these esculents in the way recommended by some writers on Mushroom growing. This autumn I wanted to have some fine crops in a new Mushroom-house which we have, but could not get any horse manure. I therefore collected a quantity of turfy soil, the result of thin cutting; with this I mixed a quantity of old, rotted straw and some green Grass, and threw the whole into a large heap, until it heated violently. It was then turned and well mixed, and, when still warm, was wheeled into the Mushroom-house, beaten firm, and the spawn inserted in the usual way. The result is an excellent crop of good Mushrooms. When the crop seemed well-nigh exhausted, we dusted a sprinkling of salt over the bed, and watered it with tepid water, and shoals of fresh Mushrooms speedily made their appearance. Last year, among many makeshifts to secure Mushrooms, we used rotten sawdust mixed with a little horse manure, but with only moderate success. In the open ground, tolerable crops were obtained late from heaps of soil mixed with Grass; but the best was from a quantity of manure very wet, in fact drenching, from a manure hill. This was placed 1 ft. thick, well beaten, and pieces of spawn inserted, wrapped in a good handful of Hay. They were covered

over with rich earth, and the crops were all that could be desired.
—M. Temple, *Impney.*

THE OCHRA.

This plant, the Hibiscus or Abelmoschus esculentus of the botanist, is indigenous to the West Indies, where the pod or seed-capsule goes by the name of the Ochra, Ochro, or Gombo, and forms the chief ingredient in the famous West Indian dish Gombo soup, which is said to have very nutritious properties. Like the fruit of all the Malvaceæ, the Ochra contains a large amount of mucilaginous matter, which gives it a great value as a culinary vegetable. For cooking purposes it is used in the green condition, being gathered when in a tender state, before the woody fibre has begun to be formed; it is also used in the dried state. In the West Indies the Ochras are gathered while green, the hard calyx being cut off; they are then sliced and exposed to the sun on trays or mats, and turned now and then until they are perfectly dry. In Greece and Turkey, where, both in the green and the dry state, they form one of the principal ingredients in the native *pot-au-feu*, they are plucked when only about 1 in. long, threaded on strings, and allowed to dry spontaneously. The chandlers' shops in Constantinople and Athens are always hung with festoons of dried Ochra.s The fresh green Ochras, stewed with collops of lamb or mutton, Onions, and Tomatoes, form one of the favourite dishes of Turkish dinner-tables. When dried they will keep for any length of time, and would form a valuable addition to the seaman's diet-table as a preventive of scurvy. The fresh Ochra is also served as a vegetable alone, when it is simply boiled in salt and water and flavoured with salt, pepper, and a little good stock. They are very mucilaginous, and have a slightly bitter flavour, somewhat resembling that of the English Turnip-top. In France a sweetmeat has been made of them, which is said to be a better remedy for affections of the throat than the famous *pâte de guimauve*. The seeds contain 16 per cent. of oil, which, owing to its bitter flavour, is useless in the kitchen; it contains a large amount of stearin, and, if obtainable in large quantities, the oil would be valuable for soap making. The oil-cake contains notable proportions of nitrogenous matter and phosphorus, and would form a very nutritious food for cattle. In Africa. the natives roast the ripe seeds and use them as a substitue for coffee The mature stalks of the plant contain large quantities of woody fibre, and M. Boujon, a French engineer, has commenced its cultivation in Algeria as a paper-making material. At the exhibitions of 1867 and 1873, Dr. Riddell showed excellent specimens of paper and cordage made from the fibre of the Ochra plant. The Ochra is moderately hardy, and ought to thrive in this country if sown in heat and planted out; in fact, it will grow under the same circumstances as the Tomato. The Ochra has long been naturalised in India, West Africa, the south of France, Greece, Turkey, and the Southern States of America. The French know it under the name of Gombo, or *Cornes Grecques;* the Greeks and Turks as the *Bamiyia;* while our own countrymen in India and West Africa have given it the pretty name of Lady's-fingers.



Pod of the Ochra.

C. W. Quin.

Culverwell's Telegraph Pea.—Mr. Tillery speaks of this (see p. 484) as a late crop Pea. In order to prevent others from treating it only as such, I write to say that it should be used as a second, or general, crop Pea, coming in, as it does, a little earlier than Champion of England. Mr. Tillery further says that its height is from 4 ft. to 5 ft. If well grown, however, its height should be from 5 ft. to 6 ft., and under such conditions the pods, as regards size and quantity, are unequalled.—W. Culverwell, *Thorpe Perrow, Bedale.*

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Winter and Spring-flowering Plants. — Amateurs who make a point of furnishing their dwellings with flowering plants during summer, and who have no glass accommodation except ordinary garden frames, often feel much at a loss in winter for material wherewith to maintain their indoor decoration; but, by the use of a good-sized frame, say three or four lights, the length of time during which they may enjoy these flowering subjects may be greatly lengthened by always having something in bloom from the latter part of winter through the spring, provided the right plants for the purpose are selected. It must be borne in mind that I am now treating of such plants as will only require protection from frost, with no artificial heat whatever; and, therefore, it is essential that the subjects employed are all but proof against damp, as in a hard winter it frequently happens that the frame will require to be kept closed, or almost closed, for several weeks together, the lights being covered with a thick coat of Fern, litter, and mats, and the sides also surrounded with as much litter as will keep out frost. Amongst the first plants that I should recommend for this kind of treatment are the different varieties of Primula cortusoides, than which nothing can be more beautiful early in spring; their flowers, which are produced in profusion, vary from white to the deepest lilac, almost approaching crimson; these Primulas will live in the open ground in favourable spots, but they never flower so finely as they do when grown in pots; 6-in. or 8-in. pots are large enough for them; they should be well drained, and good loam should be used with a little leaf-mould and sand. The Japanese Primula (P. japonica) is suitable for associating with them; this, in proportion to the size of the plant, should have plenty of root-room, the soil, too, should be well enriched with rotten manure, and manure water should be applied freely when the plants are in vigorous growth. Thus treated they will make leaves as large as the hand, with flowers proportionately strong; the whole plant, indeed, will be so different from what it is usually seen when confined to small pots with insufficient sustenance, as to assume quite another character. Some of the laced forms of Polyanthus will form suitable companions to these, making handsome window plants, as do also the common double white and lilac Primroses; different varieties of Myosotis, of which dissitiflora is one of the best, also succeed well under similar treatment; the pots for these need not be larger than from 4 in. to 6 in. in diameter. Hepaticas, naturally early flowerers, will come into bloom in a cold frame a month or six weeks earlier than in the open ground; the beautiful double blue and pink varieties are two of the best, their flowers lasting long in a cut state. Dodecatheons (American Cowslips), of which there are several beautiful kinds—white, lilac, and violet—likewise do well in cold frames, and are amongst the most distinct and beautiful flowers which one can possess. Campanulas, though not early bloomers, should likewise have a place in this frame of specialities. The elegant drooping C. fragilis, both blue and white, are amongst the very best plants that can be grown for a window, blooming, as they do, in such profusion as to almost hide the leaves of their pendent shoots, and, when their principal flowering season is over, still giving a succession, though less in quantity, up to late in the autumn; 6-in. or 7-in. pots are large enough for them. The stately C. pyramidalis is a perfect contrast in every way to the foregoing, its flower-spike forming an elegant pyramid, that, when well grown, with plenty of pot room, will attain a height of from 6 ft. to 10 ft.; there is no plant grown that is more effective in a hall or on a staircase, and during the time of its blooming, for several weeks, it will do with less light than most plants. Both the blue and the white varieties should be grown; they require liberal pot-room, say pots from 9 in. to 13 in. in diameter, according to the size which the plants are required to attain. These are biennial, and, if propagated from suckers in spring, or raised from seed, as previously recommended, they will come in most usefully next summer. In the case of these, as well as the other sorts of Campanula just named, care should be taken to pick off the capsules as the flowers fade, otherwise they are sometimes liable to communicate decay to the advancing buds; good ordinary loam answers best for them. A few of the better varieties of Pansies I would also recommend, but they should consist of the best and most distinctly-coloured show kinds, which are vastly preferable to the magpie-coloured fancy sorts. Although naturally early-flowering plants, when grown in pots they come in some weeks sooner, and, not being exposed to the beating rains and cutting winds of spring, have a fresher appearance than those seen at that season out-of-doors; another advantage is that where the flowers, which are serviceable for cutting, are so required, their stems, when grown in this way, are considerably longer than those of outdoor blooms. As a matter of course, Violets should be included, the Czar and the Queen of Violets being two of the best for the purpose; they succeed well in ordinary loam, with some manure and leaf-mould; Pansies thrive most satisfactorily in fully one-half vegetable mould mixed with loam; in both cases, enough sand should be added to ensure porosity; 5-in. pots for the Violets, and 7-in. or 8-in. for the Pansies will be found to be sufficiently large. As regards Dielytra spectabilis and its white variety, if moderate sized roots are now taken up and placed in 8-in. or 9-in. pots, they will bloom several weeks before those out-of-doors, producing their handsome drooping sprays unscathed by spring frosts. The pendent blooms of this plant are never seen to greater advantage than when hanging from the sides of a vase mixed with other flowers. To these should be added Scillas (including S. sibirica, S. bifolia, S. campanulata and its white variety) and Dog's-tooth Violets (both white and rose-coloured kinds). Hyacinths, Narcissi, Crocuses, and Snowdrops, as a matter of course, should receive attention, as many of them being grown as the frame or frames will hold. The whole of the above plants should be plunged in a bed of ashes inside the frame. Thus managed, they will require less attention in the way of watering, and be much less liable to suffer through the effects of frost, should any mishap occur so as to cause its getting inside the frame, which should stand in a sheltered place, but, above all, thoroughly exposed to the light, and under the full influence of all the sunshine that at this dull season can be got; to still further admit of the solar rays exerting an influence over the growth of the plants, the frame ought to be well raised at the back, so as to make it slope abruptly to the south; 18 in. of straw should be packed round the outside, and kept in its place by stout stakes driven into the ground; dry litter ought also always to be at hand to lay over the glass. In covering frames in winter, I have found it best during severe weather to first lay mats on the glass, then 6 in. of litter or Fern, and another thickness of mats on the top, and if light wooden shutters or light frames, on which have been nailed some ordinary asphalted covering, be laid on the top of all, the whole will be kept dry, which is a great desideratum, as when covering material is dry it wards off double the amount of frost it is capable of doing when wet; by laying mats under the litter in the way described, the glass is kept much cleaner than it otherwise would be—an important matter, as the more light the plants get the better. Air in abundance should be given on all favourable occasions, and care should be taken to keep the ashes in which the pots are plunged as dry as possible. From a frame such as that just described, with the plants fairly attended to, a great deal of pleasure, as well as a good supply of flowers, may be had, that will go far to while away the dreary months until blossoms are more plentiful out-of-doors.

Bedding Plants.—The principal stock of these should now be looked well over, and, if yet in frames, should at once be removed to a house or pit where there is sufficient heating power to protect them from frost and expel damp. Store pots of Pelargoniums, Lobelias, Verbenas, Ageratums, and everything of a similar character ought to be from time to time gone over, removing all decayed leaves, or these will quickly affect those that are sound; give just enough water to keep the soil in a healthy state, and the plants growing slowly. On the first appearance of mildew on Verbenas, which are very subject to it, dust them over with sulphur. Shrubby Calceolarias, cuttings of which were put in some weeks ago as recommended, will now be rooting, and should have more air given them by tilting the lights freely, or drawing them off altogether on mild days, which will make the plants stout and strong—the best preparation for withstanding severe weather. Where Echeverias are grown in damp, low localities, they should be wintered in a frame planted as thickly as they will stand; the soil should be kept rather dry, and the frame protected with litter and mats in frosty weather; in the southern parts of the kingdom, they will do in the open ground, but they should occupy a sloping bank in a dry, sheltered position; in both instances this applies to the smaller varieties of the secunda section, the large E. metallica will require warmer quarters. Alternantheras, Iresines, and Coleus must be kept in a house where there is continuous warmth; from 55° in the night, with 5° or 10° more by day, will be sufficient for them.

IMMORTELLES OR EVERLASTINGS.

The Immortelle (Helichrysum orientale) is principally cultivated in warm situations on the shores of the Mediterranean, where it flowers in June, or at the earliest in the end of May. It generally thrives better in barren, dry soil than in that which is rich and fertile. It produces little seed, and, therefore, it has to be propagated by means of cuttings, which are secured in the month of July. These are inserted closely together in well-prepared, shady ground, and afterwards moderately watered. From fifteen to twenty days afterwards, they begin to develop roots and new leaves. In the following spring they are transplanted, after all danger from frost is over. The ground is prepared for their reception by being dug about 3 in. or 4 in. deep, very little or no manure being added. With a view to getting the plants well established, the flowers are not gathered the first year. In harvesting the crop, the heads are cut off before the buds open, each head containing some twenty flowers; well established plants produce sixty or seventy stalks, and a plantation will continue productive from eight to ten years, the flowers being only gathered once in two years. These flowers dried, and dyed sometimes green, red, and black, are much used on the Continent for crowns and wreaths for the decoration of cemeteries.—M. L.

The Immortelle (Helichrysum orientale)

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

November 26.—Getting in another lot of Ashleaf Kidney Potatoes in pots. Making up a hotbed for Asparagus with manure and leaves that had been previously well turned and mixed. Veitch's Autumn Self-protecting Broccoli still in good condition. Planting out the last batch of Coleworts, and stirring the soil amongst those previously planted.

Nov. 27.—Potting herbaceous Calceolarias, and fumigating Cyclamens to kill green fly. Cutting down Jerusalem Artichoke stems and clearing them away, and covering up a portion of the roots with long litter to keep the frost from them. Adding to late Celery a little more earth whilst the soil is dry and in workable condition.

Nov. 28.—Sowing a three-light frame with Radishes. Potting a quantity of Echeverias, and filling a number of boxes with them. Covering up Endive and Lettuce to blanch. Getting all Peach and Nectarine trees unnailed. Finishing tying Raspberry canes and giving a good coat of well-rotted manure between the rows.

Nov. 29.—Sowing 100 pots of French Beans and earthing up those previously started. Clearing out decayed vegetables and dead leaves amongst growing crops. Making up a new hotbed for forcing Asparagus. Rolling lawn tennis ground and other turfed surfaces. Pruning third Black Hamburgh-house.

Nov. 30.—Getting a few more Cinerarias and Primulas into gentle heat to bring them forward. Giving second early Vinery a top-dressing inside, and afterwards a good watering. Looking over Cauliflowers, turning down leaves where required, and removing those that are most forward to an open shed. Plenty of Pears fit for use just now of the following sorts, viz, Beurré Diel, Beurré Clairgeau, Duchesse d'Angoulême, Doyenne du Comice, Huyshe's Victoria, and Broom Park.

December 1.—Clearing up leaves and otherwise putting the pleasure grounds in order. Rolling down all gravel walks firmly. Looking over fruit-room, and clearing away fruits that are beginning to rot. Looking over Pines, and watering such as require it; tying up fruit where necessary. Fruit in use for dessert—Pines, Grapes, Apples, Pears, Medlars, and Nuts.

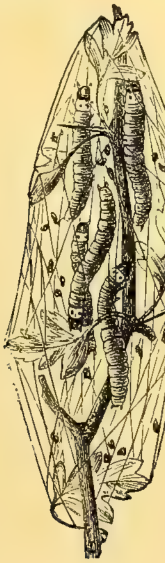
No. 315.] SATURDAY, DECEMBER 1, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

A DESTRUCTIVE SAW-FLY

(LYDA CLYPEATA).

A week or two ago (see p. 439) we gave a figure of one of those web-forming, semi-social insects that disfigure and injure our fruit trees, viz., the small lepidopterous species called Hyponomeuta cognatella. We now figure a similarly-gregarious species belonging to the Hymenopterous Order, and endowed with similar bad qualities. It is one of the saw-flies, called Lyda clypeata. During the past summer it occurred in considerable abundance in the neighbourhood of London (Isleworth, &c.), infesting the Thorn and kindred plants. On the Continent it occurs in greater numbers, where it is also said to be sometimes injurious to the Pear tree. Its larva is of an orange-yellow colour, with a black head. The shade of yellow differs in different individuals, being in some a fine maize colour, and in others a dirty straw-yellow. The texture is dull and opaque, which is due to a very fine transverse wrinkling. The larvæ form a small society of from eight to twenty, and spin a small tent at the termination of the branches, as shown in the accompanying figure. They become full fed about the middle of August, and then come out of their tent or web, and descend to the ground by the help of a fine thread, like the spiders, and bury themselves in the ground, where they spin a small cocoon, in which they pass the winter. They are transformed into a chrysalis in spring, and into the perfect insect in the month of June. The perfect insect is a small black saw-fly, about the size of the Hylotoma rosarum. It is black, with the abdomen marked on each side by from three to six small white spots, and a yellow patch on the scutellum. The base of the antennæ and the legs, as well as a spot on the upper lip, are pale yellow. When their webs are seen on the trees, Boisduval recommends that they should be swept away by coarse besoms and destroyed, a plan that is equally efficacious for the webs and larvæ of the other species of Hyponomeuta. Andrew Murray.



A Destructive Saw-fly (Lyda clypeata).

The Goat Moth (Cossus ligniperda).—The ravages of this insect are noted in your number for Nov. 24 (see p. 504), but not their remedy. I have found the following a simple and efficacious check:—At any time during the summer, when the stains which they cause on the bark of trees infected by the caterpillars are more readily observed, and at a greater distance than the offensive smell declares itself, pour spirits of turpentine into the highest perforation which can be reached, using a handful of moist clay to secure a cap around and under the perforation, to prevent waste of turpentine, and to secure its entering the timber; the insects will soon be driven out, and can be easily destroyed, one by one, as they appear. If the tree has many perforations, I have found it necessary also to cut off with a chisel and light mallet the surrounding bark, under shelter of which a nest of young caterpillars will often be found, and can easily be disposed of. The bark will soon heal over. If the Moth appears the following year on the same tree, repeat the process. In case of trees out of the sight of drives or walks, coal tar, mixed with benzoline, or any animal oil, is perhaps a cheaper remedy, but is necessarily disfiguring. Neither remedy does any injury to the timber. I have used both for several years successfully. Oak and Ash are the only trees I find infected here; but in the neighbourhood of London the Elm suffers most, so far as I have observed.—John J. Rogers, *Penrose.*

RENOVATING AND IMPROVING THE TURF ON EXHAUSTED LAWNS.

The chief cause of the wearing out of the Grass on lawns is the continual removal of the produce from it by almost constant mowing and sweeping, and bringing nothing back to supply the waste. No crop could long stand the wear of this system without showing signs of deterioration and exhaustion. Of course, where the land has been well prepared and deepened before being laid down in Grass, the period of exhaustion will be longer in occurring, but come it none the less surely will, unless some assistance be given in the way of top-dressings. There are two principal modes of improving worn-out lawns—one, by taking up the turf, manuring and improving the soil underneath, and relaying it as soon as the work can be properly done; the other, by giving rich top-dressings. The former usually answers best, but much improvement may be effected by top-dressings in February over the surface of the Grass, to be followed by sowing a few fine Grass seeds, and about 2 lb. per acre of white Clover. If the Grass be not much worn, the Clover seeds alone will be sufficient. White Clover is an excellent plant for dry soils, as it roots deeper than most Grasses, and, consequently, maintains its colour and stands drought better, but it will not grow under trees. We are accustomed to look upon earth worms as a nuisance, but, were it not for the annual top-dressing which they gratuitously bestow, the condition of many lawns would be worse than it is. The best way of improving lawns that are worn and weedy is to take the turf up, improve the soil, and re-lay it. If new turf can be easily obtained, free from weeds, a preference should be given to it; but if, in cutting up the old turf, it is cut very thin, most of the weeds, such as Plantains, Daisies, &c., being strong-rooted, will be cut through and perish, as the main part of their roots will be left in the ground. When such work is done before Christmas, the turf, even when cut thin, has plenty of time to get well established before drying weather sets in in summer. As the season advances, and the Grass, from having been closely shorn, loses its first vigour, it is a good plan to remove the collecting-box from the mowing machine, and allow the Grass to be distributed over the surface for a few weeks. It is astonishing how soon the cut Grass withers and disappears, and, if continued for a month or so, it forms such a mulch over the roots of the Grasses as effectually screens them from the blazing sun when drought sets in. There are places in which this plan might be objectionable; but the eyesore is really very little. If the Daisies be numerous, the scattering of the Grass mowings should be deferred till they have exhausted their blooming capacity, or some of the flowers may produce ripe seeds, which will grow and still further increase their numbers. A sprinkling of soot and salt mixed with wood-ashes, will be beneficial as a top-dressing in February or March for all lawns on which the Grass is weakly. Five or six cwt. of salt may be used to the acre with safety; the soot and ashes may be used liberally, and will be most beneficial in strengthening and improving the colour of the Grass. Lawns that are kept in good order are seldom infested with Moss to an injurious extent. Of course, where Moss does become established, it ultimately masters the finer Grasses; but, where the mowing machine and roller are regularly used it seldom gets unsightly. E. Hobday.

NOTES OF THE WEEK.

Viola Munbyana.—This is likely to prove almost as valuable as V. cornuta, probably more so in some soils. I have lately (Nov. 23) seen a large mass of it in good bloom in M. Vilmorin's garden at Verrieres. It has now been in bloom for ten months. Very healthy plantations of the Japanese Primrose, in the same garden, are now throwing up strong flowering stems.—V.

Chamædorea Ernest-Augusti in Bloom.—Examples of this well-known ornamental Palm may now be found in bloom in Messrs. Carters' nursery at Forest Hill. They produce strong forked flower-spikes, 4 ft. or 5 ft. in length, of the brightest crimson colour, conspicuously dotted with dark spots. Associated with the glossy green leafage, these have a striking effect.—S.

Dried Natural Flowers.—Everlasting flowers dried naturally, or dyed to vary their colours, have of late years been much used for decorative purposes; but such flowers as Asters, Chrysanthemums, Pæonies, Roses, Pansies, and Delphiniums have, until lately, escaped such attentions. The other day, however, we had an opportunity of seeing many dozens of bouquets in Messrs. Dixon's nursery at Hackney, ready for sending away, composed of such flowers, which, together with dried Grasses, were very effective, and would, if kept free from damp, last in good preservation for years.

St. Paul's.—We are glad to hear that the efforts which have been made to secure to the people of London the ground round St. Paul's Cathedral have been successful, and that an agreement will shortly be entered into between the Dean and Chapter and the Corporation for this purpose. The contemplated improvements include lowering the railings, remodelling the ground, planting trees, and making the necessary pathways.

Phalænopsids at Chelsea.—There will shortly be a fine display of these beautiful white-flowering Orchids in Messrs. Veitch's nursery. The varieties of Phalænopsis, although very beautiful, are, in comparison with other Orchids, but few. As yet no hybrids have been raised amongst them in this country, though many attempts have been made in that direction. Good seeds have been often saved from them, but they have, under all conditions to which they have been subjected, failed to germinate satisfactorily.—S.

A Beautiful New Tree (Phellodendron amurense).—This, a native of Siberia and Mandschouria, is just now a beautiful object in my garden. My specimen of it is about 12 ft. in height, and has a tall pyramidal crown of from 3 ft. to 6 ft. The form of its foliage, which is deeply lobed, gives it a singular appearance, and the colouration of the leaves, which are bright red, is very fine. It is also all the more valuable on account of its keeping its foliage much longer than other deciduous trees, which hereabouts have shed their leaves a fortnight ago. It has a spongy bark, and is called the Siberian Cork-tree.—Max Leichtlin, *Baden Baden.*

Cypripedium Boxalli.—Hundreds of plants of this Lady's-slipper will shortly be in bloom in Messrs. Low's nursery at Clapton. It is a free and distinct species, robust in habit, and having hairy leaves and flower-stalks. Its blossoms, which are freely produced, even on small plants, are peculiarly distinct from those of any other species, the upper sepal being pale yellow or green, blotched and spotted with dark purple. When better known, it will, doubtless, be largely cultivated.

Roses and Veronicas in November.—We have here a combination that could hardly be surpassed at this season, for we have been specially favoured in the matter of weather lately, so that I never saw such really good November Roses—in this part of the midlands, at least. The shrubby Veronicas are also strikingly beautiful. Of Blue Gem and Andersoni we have bushes 5 ft. or 6 ft. high, and as much through, full of flower, contrasting with clumps of Tritoma grandis, whose grand torch-like heads of bloom shine with unwonted brilliancy this fine sunny autumn; also Schizostylis coccinea, and small bushes of the silver variety of the broad-leaved Euonymus, combine with flowering Roses, such as Gloire de Dijon, Madame Falcot, Xavier Olibo, La France, and Souvenir de la Malmaison, to make one forget that it is mid-November.—E. H. W.

Chrysanthemums at Hackney.—The Chrysanthemums in Messrs. Dixon & Co.'s Amhurst Nursery, Hackney, have been very fine during the last few weeks, and, although the best of the blooms are now over, there is still a good display. Among the newer kinds now in flower may be mentioned Mrs. Barnes, a Japanese variety, with large lemon-coloured blossoms; Ethel, a pure white one; and Red Gauntlet. The best of the incurved kinds are Princess Teck, a variety with large globular flowers, the petals of which are white tinted with pink; John Salter, and a pink kind named Hero of Stoke Newington. A creamy-yellow form of Mrs. Geo. Rundle is also much valued on account of its perfectly-formed, handsome blossoms. As fast as the plants go out of bloom they are cut down, in order to induce strong cuttings to be emitted from the bottoms, for it is considered one of the most important points in the production of large flowers to get the cuttings in early.—S.

Sweet-scented Odontoglossums.—One of the most sweetly scented of Orchids is Odontoglossum madrense, a kind with white flowers, set off by a brown and gold-coloured centre. Its perfume in the morning resembles that of the Hawthorn. It is now in flower in several nurseries about London.—S.

Cypripedium vexillarium.—This is one of the prettiest of the Lady's-slippers. It is the result of a cross between C. barbatum and C. Farrieanum; its lip is brownish-crimson backed up by rich purple-striped sepals and petals.—S.

White Hoop Petticoat Narcissus.—This is now in flower with Mr. P. Barr, and very large and pure white it is. It is a lovely hardy flower, which it is to be hoped will become much less rare in our gardens than it is at present.

Oncidium Rogersi.—Mr. Broome, of St. Peter's Square, Manchester, has sent us some unusually large blooms of this Oncidium, which is really a magnificent Orchid, and so free-flowering that some spikes of it are said to have borne as many as 170 flowers. Amongst plants now in bloom it is one of the showiest.

Gift of a Public Park by the Queen.—At a special meeting of the Heywood Local Board it was announced that the Queen had presented to that town 20 acres of land for the purposes of a public park. The money required for the purchase of the land has been set apart by the Queen out of a sum exceeding £10,000 which fell to her as Duchess of Lancaster through the death, without heirs, of Mr. C. M. Newhouse, of Heywood.

Odontoglossum cirrhosum.—Few Orchids have become so abundant in so short a time as this, and, considering its beauty and use for so many purposes, it is satisfactory to know that almost any quantity of it may now be found in all the London nurseries, and hundreds of plants of it are coming into flower at Clapton. It will, no doubt, eventually be largely grown for supplying cut blooms alone, Mr. Wills having already a large number of plants of it devoted to that purpose.

Decorative Plants at Clapton.—Numerous large houses, containing thousands of Heaths and Bouvardias of various kinds, each to be brought into bloom for Christmas, may now be seen here. Among the Heaths was noticeable a new form of Erica hyemalis, which was sent out two years ago by Messrs. Low. It is named E. h. superba, and possesses a freer-growing habit than the old form, and its flowers, which are much larger, are of a bright rose colour. The uniform appearance of the Heaths in this nursery is almost as interesting as the flowers themselves, and the plants, which are remarkably dwarf and bushy, being arranged on flat stages, represent miniature meadows of deep green spray.—S.

Cattleya exoniensis.—A specimen of this Cattleya, in Messrs Veitch's nursery, is now bearing nearly twenty fully-expanded blossoms, and there are many buds yet to open. The flowers, individually, are among the handsomest to be found in the fine genus to which the plant belongs; but, when seen in quantity, as on the plant alluded to, the effect is striking indeed.

"Breeze" as Hothouse Fuel.—We have been for the last four months testing breeze, *i.e.*, washed cinders from furnaces, as a fuel for a saddle boiler. It costs in use less than half as compared with small coal, does not choke the flues, is practically free from sulphur, and holds a steady fire longer than any fuel we have used. This fuel should be better known than it is at present.—F. F.

Summer-Flowering Chrysanthemums.—These belong to the C. indicum section, in which one or two are very handsome. The fact alone of their flowering in the open air in June, July, and August, before any of the varieties of C. sinense have made their appearance, is sufficient to bring them prominently into notice. C. indicum nanum is, without doubt, in every respect the best of this group. It is hardy, of a dwarf, neat habit, being more than 2 ft. high, very free-flowering, and the flowers are of good size and striking in colour. Under glass, the flowers are white, but in the open ground they are tinted with rose at the margins. As a border perennial, I can strongly recommend it for almost any soil or situation; give it plenty of manure when it is planted, and divide annually or increase it by cuttings in the ordinary way. It gets too large and unsightly if left alone for two or three seasons. I find the divided plants to flower much more freely and earlier than those from cuttings, but the blooms are not so good.—A. P.

A WEST INDIAN BOTANIC GARDEN.

Charles Kingsley, whose pretty house and garden at Eversley we engraved in last week's Garden, was a passionate lover of flowers, and his descriptions of trees and plants—where they occur—always bear the stamp of keen observation and excellent descriptive power. This is fully seen in many passages in various works, but particularly in "At Last," from which we extract the accompanying passage and illustration:—"But what would—or at least ought to—strike the new comer's eye with most pleasurable surprise, and make him realise into what a new world he has been suddenly translated—even more than the negroes, and the black vultures sitting on roof-ridges, or stalking about in mid-street—are the flowers which show over the walls on each side of the street. In that little garden, not 30 ft. broad, what treasures there are! A tall Palm—whether Palmiste or Oil-palm—has its smooth trunk hung all over with Orchids, tied on with wire. Close to it stands a purple Dracæna, such as are put on English dinner-tables in pots: but this one is 20 ft. high; and next to it is that strange tree the Clavija, of which the Creoles are justly fond. A single straight stem, 15 ft. high, carries huge oblong leaves atop, and beneath them, growing out of the stem itself, delicate panicles of little white flowers, fragrant exceedingly. A double blue Pea (Clitoria Ternatea, which should be in all our hothouses) and a purple Bignonia are scrambling over shrubs and walls. And what is this which hangs over into the road, some 15 ft. in height—long, bare, curving sticks, carrying each at its end a flat blaze of scarlet? What but the Poinsettia, paltry scions of which, like the Dracæna, adorn out hothouses and dinner-tables. The street is on fire with it all the way up, now in mid-winter; while at the street end opens out a green park, fringed with noble trees all in full leaf; underneath them more pleasant little suburban villas; and behind all, again, a background of steep wooded mountain a thousand feet in height. That is the Savannah, the public park and race-ground; such as neither London nor Paris can boast. The flowers seen at a flower show here were not remarkable, save for the taste shown in their arrangement, till one recollected that they were not brought from hothouses, but grown in mid-winter in the open air. The Roses, of which West Indians are very fond, as they are of all "home," *i.e.*, European, flowers, were not so good as those of Europe. The Rose in Trinidad, though it flowers three times a year, yet, from the great heat and moisture, runs too much to wood. But the roots, especially the different varieties of Yam, were very curious; and their size proved the wonderful food-producing powers of the land when properly cultivated. The road—and all the roads round Port of Spain, thanks to Sir Ralph Woodford, are as good as English roads—runs between the Savannah and the mountain spurs, and past the Botanic Gardens, which are a credit, in more senses than one, to the Governors of the island. For in them, amid trees from every quarter of the globe, and gardens kept up in English fashion, with fountains, too, so necessary in this tropical clime, stood a large "Government House." This house was some years ago destroyed; and the then Governor took refuge in a cottage just outside the garden. A sum of money was voted to rebuild the big house; but the Governors, to their honour, have preferred living in the cottage, adding to it, from time to time, what was necessary for mere comfort; and have given the old gardens to the city, as a public pleasure-ground, kept up at Government expense. This Paradise—for such it is—is somewhat too far from the city; and one passes in it few people save an occasional brown nurse. But when Port of Spain becomes, as it surely will, a great commercial city, and the slopes of Laventille, Belmont, and St. Ann's, just above the gardens, are studded, as they surely will be, with the villas of rich merchants, then will the generous gift of English Governors be appreciated and used.

A Botanic Garden in the West Indies (Port of Spain).

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Cupressus macrocarpa Submerged.—In the autumn of 1875 I planted a Cupressus macrocarpa on a small eyot in the River Barrow. It was submerged that winter, and stood the ordeal well, appearing none the worse the following year. Last winter, though actually from 2 ft. to 3 ft. deep in water for two months continuously, it has, to this day, a beautiful rich green colour, and is growing fast. This tree seems to flourish well in almost all soils.—J. H. W. Thomas, *Belmont Carlow.*

The Strawberry Tree (Arbutus Unedo.)—Both large and small specimens of this handsome evergeern shrub are very effective at this season; viewed simply as an evergreen shrub, it is worthy of a place in even the most select collection, but when covered with large clusters of white pendent flowers intermixed with handsome Strawberry-like fruit, it is especially attractive. It is not planted so largely as it deserves to be, for it will grow almost anywhere, and is especially adapted for sea-side planting. Its contour is improved by just a little shortening back of the long shoots in March.—E. H.

ROSES.

Tea Roses.—The trade done in Tea Roses from France is now nearly at an end, English growers being able to compete, on equal terms, with French raisers. Rose-growing is considered, in favourable seasons, a profitable undertaking. The plants are grown in good sandy loam in pots varying in size from 8 in. to 10 in. in diameter, and some growers have plants in large tubs. The plants are grown in the form of pyramids, by tying the main shoots to an upright stake placed in the centre of each pot. Treated in this way, they have a neat and uniform appearance, and do not take up so much room as bushy plants would do. In spring, when the plants are out of flower, they are potted, if found necessary; but the plants frequently remain in the same pots for several years, unless the drainage becomes defective. Pruning is seldom adopted, except to remove over-luxuriant growths, which are very seldom produced, on account of the quantity of flowers each plant is made to furnish. The best kinds are Niphetos (white), Isabella Sprunt (yellow), and Duchess of Luxemburg (pink). In forcing Roses, market gardeners always avoid subjecting their plants to a high temperature until their bloom-buds are formed, at which period the heat is gradually increased until 65° to 70° is arrived at. Frequent fumigations with tobacco and daily syringings with tepid rain water keep the plants free of insects, and a succession of bloom is obtained for several months from one batch of plants. Each day, when the buds begin to expand, all the plants are gone over, and each bud ready for market has a piece of soft matting tied round its petals to prevent them opening, they are then cut and placed in boxes and sent to market three times a week.—S.

Planting and Pruning Roses.—Now is the best season of the year to plant Roses. When the plants are procured from the nursery it should be stipulated that they are to be lifted with as many roots as possible. Through the carelessness of the workmen employed to take them up, the plants are frequently sent without a root adhering to them, the Brier stock having just the knob at the end of it that it had when dug up out of the wood or hedgerow, and looking like a walking-stick more than anything else. The consequence is that many good plants die before the winter is over; the roots are simply torn off in lifting. Autumn-planted Roses should not be pruned till spring, otherwise they are much more likely to suffer from frost. In planting, wide and deep holes should be made for the roots, unless the border has been recently prepared and enriched, and plenty of good loam given, or, failing that, well-rotted manure mixed with the soil, and afterwards the roots should be well mulched. As regards the pruning of the Rose, the problem is, which is the best season—autumn or spring? Were we sure of a mild winter and a genial spring, autumn would assuredly be the best time; but, should the winter turn out severe, the work might be advantageously left till spring. The danger of waiting till the latter season is that the buds at the points of the shoots, should the weather prove mild, are apt to push, and such growth, being removed at the spring pruning, represents a considerable loss of vigour. On the other hand, Roses pruned in November are also apt to break away too soon and get injured by late frosts. Perhaps the best plan is to wait till the turn of the year, say January or February, and then prune, choosing open mild weather for the work; but, as a rule, all weak varieties or feeble plants may be left till later in the season. I am quite sure that all pruned plants suffer worse from severe frosts than unpruned ones, and this is particularly noticeable in the case of the Rose.—C.

FROM KEW.

The pearly white, Mistletoe-like berries of Rhipsalis Cassytha, in the Cactus house, claim our attention; they are seated on the blunt, cylindrical, cord-like branches. In the West Indies this Cactaceous plant is an epiphyte, and hangs down from the branches of trees in tufts from 1 ft. to 6 ft. in length. Astelia Banksi, from New Zealand, is both in flower and fruit; the branched panicles are half-hidden by the densely-tufted, Sedge-like leaves, and are not at all showy; but the lilac-coloured, berry-like fruits are pretty. The genus Astelia belongs to the Natural Order Juncaceæ, and is restricted to the islands of the Southern Ocean. Crassula lactea is one of Masson's introductions from the Cape of Good Hope; it is a very close-growing, free-flowering species, and blooms during the winter months. The flowers are white, and a well-grown plant is a very pretty object.

The warmer compartments of the new range contain some very interesting plants. Aphelandra Porteana is a handsome species of one of the most beautiful genera included in the large Natural Order Acanthaceæ. The flowers are more brilliant than those of A. aurantiaca, and the leaves are not only larger, but of a much more decided metallic hue. Dædalacanthus paniculatus is another Acanthad, of neat, dwarf habit; its pleasing lilac flowers are produced in great abundance. The splendid blue of Clitorea ternatea, one of the prettiest of the climbing Leguminosæ, is very striking, and the more so by reason of the blotch of white at the base of the standard. This very fine old plant should certainly be more frequently seen in gardens. The singularly-distorted stems and branches of the gouty-stalked Jatropha, J. podagrica, together with the large cyme of rich, orange-scarlet flowers, are very curious. The scars of the fallen leaves are large, and are rendered conspicuous by the persistent, fringed, and glandular stipules. This peculiar Euphorbiaceous plant flowers at almost all seasons of the year; but its place is more in the botanic garden or in the stoves of the curious than in general collections of warmhouse plants. It hails from Santa Martha, in New Grenada. Peculiar as are the strange and varied forms assumed by the flowers of many of the tropical Orchids, perhaps none present a more remarkable appearance than those of Cirrhopetalum Medusæ; the flowers, taken individually, are small, but are numerous, and two of the three sepals are so very much lengthened as to give the short, dense spike the semblance of a head with very long, dishevelled hair; this induced Dr. Lindley to call the plant the Medusa's-head Orchid; Singapore is its native country. The flowers of the Brazilian Epidendrum variegatum emit an odour somewhat like that of the Lily of the Valley. This species is very subject to variation; the Kew plant has sepals and petals marked with reddish-brown blotches on a pale green ground. Masdevallia polysticta is a charming species from the temperate region of the Andes of Northern Peru; it is one of Roezl's discoveries. The flowers are white, speckled with purple; and, measuring from the top of the dorsal to that of either lateral sepal, are about 1½ in. in diameter.

The following may be seen in the Palm house—Aechmea glomerata, is a handsome plant, very effective at a season when conspicuous plants are somewhat deficient in most stoves. This and many other Bromeliads are of very easy cultivation. The present species has rigid, spinescent foliage, and a stout scape bearing brilliantly coloured, blood-red, branched panicles of large bracts studded with small violet flowers; the rachis is green, tinged with red, and the floriferous branches, with the dense bracts, form broad, ovoid masses. It was first brought to this country (some twelve or fourteen years ago) from Bahoa, in Brazil. Plumbago zeylanica has white flowers, and is not such a showy plant as either P. rosea or P. capensis. It has a wide geographical range, extending as far north as 30° N. lat. in the Indian Plains, and as far south as Port Jackson, in Australia. When first received in England, it was treated as a half-hardy shrub. The fresh roots bruised, act as a very severe blistering agent, and Dr. Royle says that the natives of India call it by "all the names of fire." The only European species, P. europæa, possesses similar properties, and, though no longer used in medicine, is employed by beggars to cause artificial sores. Alyxia ruscifolia is a small shrub with rigid, glossy leaves, and small white flowers, which smell like Jasmine. The pretty red baccate fruits contrast well with the neat, dark green foliage; a well-fruited specimen being extremely ornamental. This plant belongs to the Periwinkle family, Apocynaceæ, and is particularly interesting on account of its berry-like fruit; it grows in tropical Australia, and also in dense woods near Moreton Bay. It will do well in a cool-house. Pancratium caribæum is a very handsome white Amaryllid from the West Indies. The corona is formed of the dilated bases of the filaments. Crinum ornatum is another very beautiful member of the same family. A most remarkable fact connected with the geographical distribution of this Order is, that the genera without a corona to the perianth are very rare in Europe and North America, while they abound in South Africa and trans-Equatorial America. G.

Cycas Intermedia.—Cycads generally are prized for conservatory decoration, but few of them are more graceful than this. Its fronds are of a lively green colour, very bright and elegant, and on well established stems attain a length of 7 ft. or 8 ft. We lately saw a specimen in Mr. William's Nursery, at Holloway, which had a stem from 10 ft. to 15 ft. high.—C. S.

Variegated Habrothamnus.—The variegated leaved form of H. elegans, though comparatively little grown, makes a good subject for small pots or pans in winter. It possesses a compact habit, and is beautifully variegated with white and green. It succeeds well in an intermediate house.—C.

Christmas Roses.—These are flowering well this year, and I note a curious thing respecting them—that though the season of 1877 has been throughout a month or more behind hand, yet the Christmas Roses of 1877-8 are quite a month or more in advance of the usual time. How is this to be explained?—H. N. Ellacombe, *Bitton.*

THE ENGLISH GARDEN SIDE OF THE PETIT TRIANON.

This charming little peep of the Petit Trianon well shows the superiority of simplicity and a carpet of Grass, as compared with the very different materials often seen before houses. There are some noble trees among those shown, notably a very fine spreading Sophora. The open glade of Grass allows the forms of the trees to be seen and enjoyed, and the effect is charming, especially in spring, when our view was taken. The Grass is somewhat rougher and more tossed in appearance than it really seemed, but that is M. de Bar's fault—artists not liking shaven surfaces.

Tropæolum speciosum, T. polyphyllum, and Philesia buxifolia.—Allow me to supplement Mr. Miles' notes on these three plants with a few words of caution. He strongly recommends them, and no one who knows them will think his glowing descriptions too strong; but first as regards T. speciosum. This is not by any means the easy plant to cultivate that Mr. Miles supposes; I have tried to grow it in every aspect and in every sort of soil, and have failed in all. It is one of those capricious plants that will grow without any trouble in some gardens, but which no amount of labour will induce it to grow in others. My first plant came, many years ago, from Mr. Veitch, of Exeter, and, by his direction, I planted it in a north aspect in soil mixed with a large proportion of dry hedge clippings; but though I never succeeded with it, I still continue to try it. It seems specially to like Scotland. I have seen it at Inverness, and at Bowhill, near Selkirk, but I think I never saw it in greater beauty than I did last year trained up the front of the Police Station at Buckden, at the upper end of Wharfdale in Yorkshire. With T. polyphyllum the case is different; I believe that will grow anywhere, and it spreads rapidly. The objection to it is that it goes off immediately after flowering, and in a very untidy manner; it does very well on rock-work. Philesia buxifolia is certainly not hardy. I have tried it more than once, but without success, and should not try it again. Mr. Miles thinks it would be hardy, because it comes from the same region as Escallonia macrantha, but that is no guide. There are many tropical plants that we can grow out-of-doors, and there are many from temperate regions which we cannot grow. The subject of hardiness is very curious and interesting, but too long for this note. —Henry N. Ellacombe, *Bitton Vicarage, near Bristol.*

The English garden-side of the Petit Trianon. Drawn by A. de Bar in April, 1877.

Flowers and Fruit of the True Paradise Stock.—This stock, of which so much has been said of recent years, is seldom seen in flower or fruit. The cuts which we now publish (see pp. 514 and 515) were drawn and engraved for us during the present year from specimens kindly furnished by M. Carrière, of the Garden of Plants.

Begonia Frœbeli.—I obtained a packet of seed of this last spring; it was sown in March, and the young plants commenced to bloom in August. They are now one mass of flowers, each measuring over 3½ in. n diameter.—J. Clews, *Headfort, Kells.*

THE FRUIT GARDEN.

CULTURE OF THE GRAPE VINE.

It may be said that more than enough has been written on this subject; nevertheless, if we take up a book containing anything about the Vine, it is the first to arrest attention. Grapes are the first fruits that attract the eye in a dessert and the most useful and highly appreciated in a sick room. If only for the benefit of the latter, therefore, Vine culture ought to receive every attention, in order that Grapes may be brought within the reach of everybody.

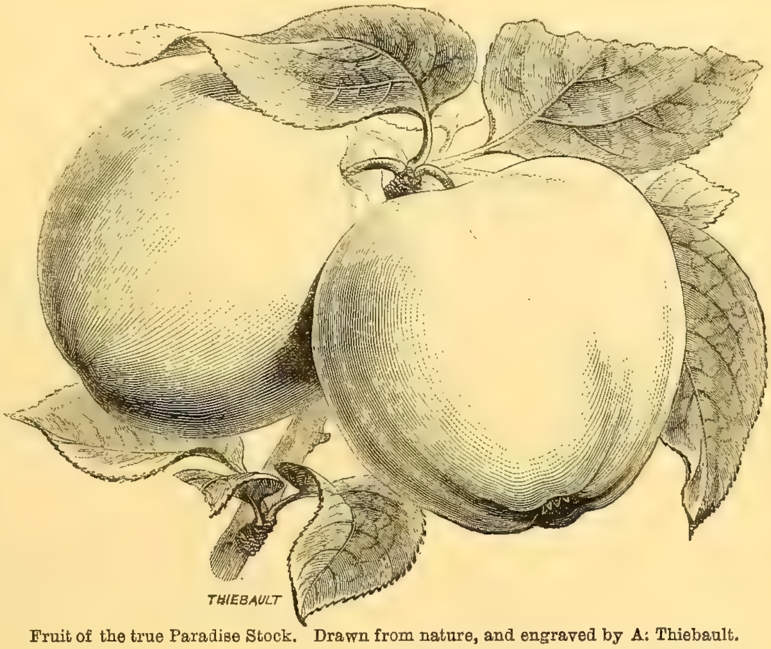
Site for the Vineries.

The situation in which a Vinery is erected should not be too high, as elevated gravelly subsoils are difficult to keep moist during severe droughts, and a low position must be equally avoided, unless the water can be drained off 2 ft. or more below the bottom of the border, as nothing is more inimical to the successful cultivation of the Vine than stagnant water. A gentle slope to the south is desirable, and it should be well sheltered from the north and east winds; but the shelter, if of trees, should not be too near the Vineries. In order to produce Grapes by the end of March, April, or May, a lean-to house is most suitable, as it affords the greatest amount of light during the dark months, presenting the whole surface of glass to the south, and maintaining a uniform temperature, which is necessary to insure success in early forcing. In the construction of the roof, no more wood or iron should be used than is necessary to secure strength and durability. The front wall should be built on arches or pillars. The back wall should be plastered and whitewashed. The training wires should be stretched lengthways, 10 in. apart and 18 in. from the glass; for, if nearer, vigorous-growing shoots are apt to get chilled by coming in contact with the cold glass before it is safe to tie them down. The heating power should be on a liberal scale, so that a sufficiently high temperature can be maintained without overheating the pipes, and which, in the end, is the cheapest, less fuel being required. In an early Vinery 16 ft. wide and 14 ft. high, eight rows of 4-in. pipes are not too many in cold, wet northern counties. Arrange the pipes so as to distribute the heat equally throughout the house, and keep them as far from the floor as circumstances will allow. When placed against a front wall, the heated air ascends direct from the pipes, and, coming in contact with the cold glass roof, looses part of its heat before reaching the top of the house, a fact which explains why Grapes over hot-water pipes are ripe a month before those at the top of the house. As regards ventilation, it is necessary that it should be ample, both at front and top. Early Vineries, in which Grapes are cut in March or April, require every means to be used to keep them cool in summer, and so prevent a second growth in August or September; the front lights should open with a rod and lever, and the angles, instead of being riveted, should have a small bolt or nut, so that when the Vines are at rest the nut can be unscrewed and the lights opened to their full extent. For late Grapes, a span-roofed Vinery, 24 ft. wide and 18 ft. high, answers very well. It should stand north and south; in that way it gets the full benefit of the sun longer than a lean-to house, as the east side gets the morning sun as it rises, and the west side until it sets; besides a span-roofed Vinery contains a larger volume of air than a lean-to one, thus maintaining a more uniform temperature, which is beneficial, not only to the well ripening of both wood and fruit, but as regards the improving the flavour and keeping qualities of the Grapes during the damp, dark autumn months.

Construction of the Border and Planting.

Flower of the true Paradise Stock. Drawn from nature, and engraved by A. Thiebault.

The first consideration in making a Vine border is the drainage, for however great the care afterwards may be, good results cannot be attained if the young roots made in summer are destroyed in winter by ineffective drainage. The character of the drainage must be arranged according to the position of the Vinery. But few situations occur in which Vines derive any benefit by being allowed to run into the subsoil, so that, as a rule, it is safest and cheapest in the end to concrete the bottom, which should have a slope of 1 in. in the foot from the Vinery to the extremity of the border. If the subsoil be damp and retentive, take out the surface soil to the depth of 18 in. or 2 ft., and fill in with refuse brick or stone, covering the whole floor with 4 in. or 5 in. of concrete, and allowing it to get thoroughly dry before introducing the drainage. Run a main drain parallel with the border, 10 in. below the concrete; and, to make sure of perfect drainage in case of spouts running over, lay a row of 2-in. drain tiles, at distances of 6 ft. apart, at right angles with the main drain, filling in between with refuse brick or stone, to the depth of 9 in., and finishing off with finer material; over the drainage place fresh turf, with the Grass side downwards. In making borders for Vines, care should be taken to have them of a permanent character, avoiding rank manures and a too retentive soil, which destroys the active roots in winter, producing long-jointed wood, and shanking the following season. Under good treatment, Vines will continue in a healthy bearing state for a great many years. The best material for borders is a good, strong, fibrous loam, of a calcareous character, with plenty of fibre in it, taken not more than 3 in. deep from an old pasture. First mow off the Grass and stack the thin turves for a month or two previous to using them; although, if the turf be in a dry state, it may be used at once. Fibrous turf, being often difficult to procure, is, however, fortunately not the only material in which Vines can be grown, for fair Grapes may be obtained from Vines in any good ordinary soil, mixed with a few ½-in. bones, broken brick, or lime rubbish, with rich top-dressings of manure. In forming the border it is a mistake to make it the full width at first, as a great portion of it must be unoccupied with roots for some time, while the fibre is decomposing to no purpose. Make it piecemeal, as every addition throws fresh vigour into the Vines. Get a quantity of waste bricks, according to the size of the border, and break them up similar in size to stones used for macadamising. I prefer broken bricks to lime rubbish, particularly in the case of early forcing, where the borders have to be kept dry during the months of July and August. The roots, coming in contact with the pieces of brick, throw out rootlets that completely envelop them, and, even if the border be dust dry, I find these rootlets quite fresh, being preserved by the moisture contained in the brick. There is no necessity for going to a great expense for materials, inasmuch as broken bricks, a few ½-in. bones, and some good fibrous loam, with perfect drainage, are all that is required. Such a mixture is always sweet and lasting. Manures of any kind should always be applied on the surface, the water from rains and otherwise conveying it to the roots by degrees, as required by the Vines, thus keeping the border sweet and healthy. The drainage being complete, let the border extend 5 ft. from the front wall, both inside and out, making, together with the arch, about 11 ft. To every five or six barrowfuls of chopped turf, add one or so of broken bricks, according to the character of the loam; beat all well down, with the back of a four-pronged fork, to the depth of 3 ft., sloping to the front, where there should be a dry wall of single bricks, to keep the materials in their place, and to induce any roots that come in contact with them to throw out laterals or rootlets, and protect them from the weather. Additions of not less than 3 ft. should be made to the border every year, until it is completed. If the soil surrounding the border be of an unfavourable character, it is best to cut the roots off from it by means of a wall. The following are the best Vines for forcing, to cut in March, April, or May, viz., Black Hamburgh, Foster's Seedling, Madresfield Court, and Muscat of Alexandria. Muscat of Alexandria should be planted at the hottest end, and given less air than the others. Late Grapes, for use in the winter months, should consist of Muscat of Alexandria, Alicante, Lady Downes, Gros Colman, and many other useful varieties might be added. In selecting Vines for planting, those that are one year old are perhaps the best in the hands of the inexperienced; and, to make sure of being free from the Phylloxera, it is best for all growers to raise their own Vines. I prefer Vines raised from eyes in spring, on the turf system, as they are easily transplanted, without interrupting the growth. At pruning time, select the best ripened short-jointed prunings with plump eyes, tie them in a bundle, label them and lay them in the soil by the heels, in a cool greenhouse, until, say the beginning of February. In preparing the eyes, cut the shoots with a sharp knife into lengths of 2 in., the eye being in the centre; cut away the wood on the upper side within a ¼ in. from the eye, in a slanting direction. Cut rather more than the number required of fibrous turves, 6 in. square and 2 in. thick. Cut a niche in the centre, and place in it the eye, covering it over with fine soil, and packing the turves closely together on slates; then give a gentle watering with tepid water, and place them on a bottom heat of from 70° to 75°, with a moist atmospheric temperature of from 60° to 62° at night, and from 70° to 75° in the daytime, with plenty of light. When started in a low temperature, the buds loose vitality, which weakens the growth. As soon as the roots begin to show themselves through the sides of the turf, prepare for a shift, by cutting double the number of turves you require, 12 in. square, and 2 in. thick, placing one on the other, on separate slates, and cutting the centre out of the uppermost 6 in. square. Select the most promising young Vines, and carefully place them in the turf, which should fit exactly, cutting off first, with a sharp knife, the points of the strong roots round the edges of the turf, an operation which causes them to throw out more lateral roots and strengthens the growth of the weaker rootlets, closing the union with a little fine soil; then give a gentle watering and replace them in bottom-heat, which must be maintained. Give ventilation only when the weather is favourable, and, if all goes well, they will be ready for planting out in a month or six weeks. The border being ready, a hillock, 5 in. or 6 in. higher than the intended position at which the Vines should stand, should be made against the front wall of the house, to allow for subsiding. This keeps the collar of the roots well up, and allows plenty of room for top-dressing. Vines should never be allowed to root up the stem through earthing them up. Being on separate slates, the plants may be carried and placed in their positions on the slates, slipping them from under the Vines without the least check, and filling up with the compost. Give a gentle watering, and tie each plant to a small stake, until it has reached the wires. If it be intended to grow plants beneath the Vines, they should be planted 3 ft. 6 in. apart, but if for Vines only, 2 ft. 6 in. After planting, cover the borders with half-rotten stable manure to the depth of 3 in. or 4 in.; this protects the surface, and water carries down the manurial properties into the border. The Vines being planted, the chief object is to obtain the largest possible amount of well-ripened wood and roots. On these depend future productions. Keep the day temperature at from 70° or 75°, or 5° more with sun-heat, and from 60° to 65° at night, paying strict attention to ventilation, and shutting up early in the afternoon. Sprinkle every part of the floor and inside border with water. Tie the leading shoots to the wires, allowing the laterals to grow freely; and, if any should take the lead, pinch out the centre, so as to keep them equally balanced, allowing them to cover every inch of the roof. In proportion to the foliage which the house contains will be the number of roots in the border. When they reach the top of the house, train them down the other side, *i.e.*, if the house be span-roofed; but, if a lean-to, train them on the back wall. It is frequently the case that fruiting pot Vines are placed between the permanent ones, but this, in the long run, is no saving. Watering with tepid water must be regularly attended to as the Vines get into rapid growth. When the house gets well filled with foliage and the wood begins to ripen, admit air freely, and, to some extent, withhold moisture. To prevent red spider, mix sulphur with milk, and paint it on the hot pipes; take care to keep the foliage healthy until the wood gets brown and solid, when the ventilators may be opened to their full extent. As soon as the leaves are down, prune at once, heading the Vines back to a foot or so below the rafters, as the buds at the base rarely break if the shoot be left long. When the wounds are dried up, rub a little painter's knotting over them, young Vines being liable to bleed. Cover the outside border with litter and wooden shutters to protect the roots from rain and frost, keeping the inside cool until the time to start again has returned. In the case of late Grapes, the Vines should be allowed to break into growth without fire-heat, which they generally do about the end of April; but, if for early fruit, close the Vinery the first week in February. Wash the glass and wood-work with soft soap and water; whitewash the walls with new slacked lime mixed with a handful of sulphur; paint the wires with white lead and turpentine, or as a substitute paraffin; in fact, it is the best plan to give a coat of paint inside every year at starting time, an operation which both destroys the eggs of insects, and preserves the wood. All the spent manure on the surface of the borders, both inside and out, must be carefully taken off when the Vines are started into growth, removing all the loose bricks against the front of the borders, and any roots tending downwards must be reversed. Then add 3 ft. more to the border, replace the loose bricks, and over the whole spread 3 in. of half-rotten manure, with 8 in. or 10 in. of litter, covered with wooden shutters. Commence with fire-heat the last week in February, syringing the Vines three times a day, and filling the evaporating pans. Maintain a night temperature of from 45° to 50°, and in the daytime from 55° to 60°, according to the state of the weather. As the growth begins to push, the temperature may be increased, and the same attention in every way paid, as directed for the first season. At the end of April remove the shutters and litter from the outside border, only leaving the manure. Pay every attention to watering the inside border, as the Vines will grow rapidly this season, and any check from over dryness should be prevented, it being almost impossible to give a young growing Vine too much water, if the border be well drained. When the leading shoots get half up the rafter, pinch out the centre and also the top of the laterals, allowing the others to grow until the leading bud breaks again, when the laterals may be pinched to three leaves. This strengthens the buds at the lower part of the Vine, which are to bear fruit next season. Allow the leader to grow to the top, where it should be stopped, thus causing the rod to thicken and the buds to swell. Allow the laterals to grow freely, as they encourage root action; if the season should be very dry, see that the outside borders receive plenty of water. As the wood begins to ripen, give more air and less moisture, cutting the laterals to one leaf, which plumps up the buds. Keep down red spider, and proceed as previously directed.



Fruit of the true Paradise Stock. Drawn from nature, and engraved by A: Thiebault.

Third Season.

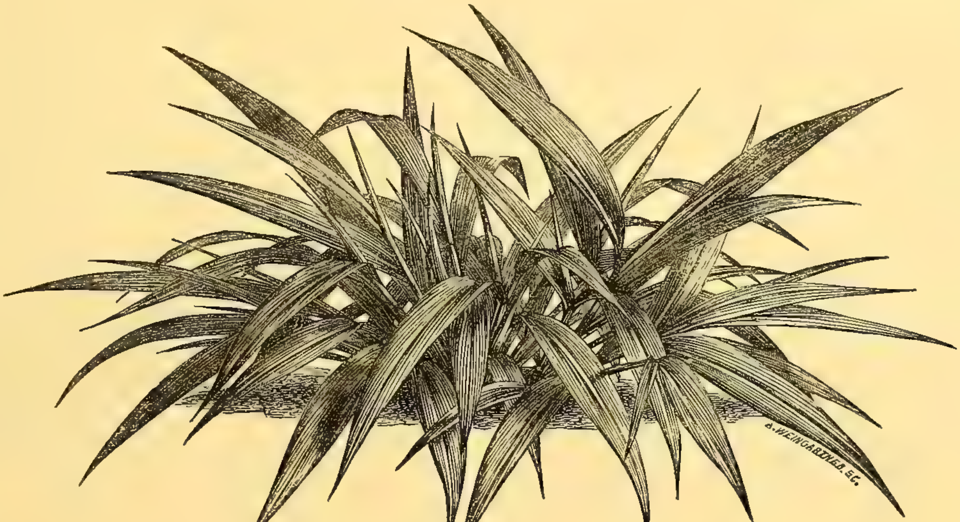
It will now be necessary to say a few words with regard to temperature, as the next is the first fruiting season, and, with respect to heating, considerable latitude must be allowed, as the cultivator must be regulated by certain conditions as regards weather. In early forcing a vast amount of injury has been done to Vines by keeping the night temperature too high. Vegetable life, as well as animal life, requires rest at night, to fit it for work next day. Always, therefore, avoid exciting influences in the absence of light; true, shoots will lengthen as much by night as by day; but no new material is added, the result being merely an extension of tissue formed during the day. I have repeatedly had early Muscats at 55° at night, when in full bloom, setting as freely as Hamburghs. This, no doubt, may be attributed to the vigorous growth obtained under a low night temperature, with a rise as early as possible in the daytime to the usual height. The details of treatment for the third season will be equally applicable to subsequent years. Let us suppose the Vinery closed the first week in January. Wash and clean according to former instructions. Scrape off the loose bark, and paint the canes with Fowler's Insecticide, in the proportion of four ounces to the gallon of water; and, in order to induce the regular breaking of the buds, tie the points of the Vines down to the border, and carefully clear off all the spent manure, if any be left, as it is liable to generate fungi. If any roots should have run into the manure, comb it out with the fingers, covering the roots with fresh loam. Add a second 3-ft. addition to the front of the border, and cover as directed for the last season, enclosing the natural summer's heat, preserving the surface roots, and encouraging an upward tendency. Apply fire-heat the last week in January; give a gentle watering at 75° to moisten the surface, and five or six days afterwards give a thorough watering to moisten the border throughout, maintaining a night temperature of from 50° to 55°, raising it 5° or 10° with sun-heat in the daytime, until the buds begin to swell, when it may be raised gradually from 60° to 65° at night, according to the severity of the weather, with 70° in the daytime, or with sun to 85° or more. It is opposed to Nature in early forcing to open the ventilators and let sun-heat out and cold air in; always supply moisture according to the weather. As the Vines come into leaf, cease, by degrees, filling the evaporating pans, so that all may be empty by the time they come into bloom. Damping in the morning may be dispensed with until about ten o'clock, when each Vine should be given a sharp tap with the hand on the main stem in order to disperse the pollen; then damp every part of the floor and walls to produce a genial growing atmosphere. On dark, dull, cold days, keep the temperature low, with less moisture, and make up for the loss on bright days by running the temperature up to 85° or 90° with sun-heat. This produces short-jointed wood, clean foliage, and plenty of substance, an important item in finishing off the fruit satisfactorily and in preparing the Vines for a full crop next year. Never use a syringe after the buds have broken, for, however clear the water may be, it always damages the bloom, which is so highly appreciated. I have an early Vinery 56 ft. long, in which I commenced to cut the third week in April, and it has not an evaporating pan in it, nor is the syringe used from the time when the Vines begin to push until the Grapes are ripe, and this Vinery always produces the heaviest crop, and the foliage is freer from insects and warted leaves than that in any other house. Keep the fire-heat up when the sun shines until April, and, as the sun gets more powerful, more air is required. Give ventilation whenever the weather is favourable, and, as soon as the Grapes are fairly set, give a good watering to the inside border at 75°, and keep the atmosphere in a good growing condition. Early forcing cannot be carried out successfully by dry rules; the cultivator must adapt his practice according to circumstances and the condition of the weather.

Disbudding and Thinning.

In disbudding, leave the side shoots of young Vines from 12 in. to 15 in. apart. Stop the fruit-bearing shoots two leaves above the bunch, and, if a growth shows more than one bunch, pinch the worst off. The Vine being pruned back to one third its length, should not be allowed to carry more than four bunches, which are generally large in the case of young Vines, weighing from two to three pounds or more according to the variety. No bunch should be left on the leading shoot, which must not be stopped until it has reached the top of the house; pinch the laterals to one or two leaves, always keeping the strongest the most pinched in, as it throws more strength into the weakest, and maintains an equal balance of growth. Allow every leaf plenty of room to expand, a great number of large well developed leaves, being much better than a large quantiy in a crowded state. Take care to tie in the young shoots by degrees, merely keeping the points from touching the glass, until the young growths get matured, as they are apt to snap off from the main stem, leaving a blank on the Vine that is not easily repaired. As soon as the shoots are hidden underneath the wires, thin the bunches to the number directed, except in the case of "shy setters," which are better left until they are set, as the strongest shoots and bunches are apt to set the worst. It is recommended by a great many Vine cultivators to commence thinning the berries as soon as they have attained the size of a pin's head, but I never found any advantage to occur from doing so. I prefer allowing them to attain the size of early Peas, when it is easily perceived which berries are taking the lead, and when the bunches can be thinned finally at once, which is perferable to going over them a second time. To keep the bloom in perfection and the bunch compact, the less the berries are handled the better. With a light wooden peg in the left hand, and a pair of clean Grape scissors in the right, the operator should begin at the bottom and work to the top, easing the shoulders with the peg, and thinning out all the small and innermost berries, being careful not to rub them with either the peg or scissors. More than half of the berries, as a rule, require cutting out, leaving plenty of room for those left to swell; but discretion must be used in accordance with the variety. Sufficient, however, must be left to make a compact bunch when finished, as nothing looks worse than a bunch of Grapes, when laid on a dessert dish, spreading all over it. It should lie as compact in shape as when growing on the Vine. About the first week in June, the Grapes will commence their second swelling, and the inside border must have a thorough watering with weak liquid manure at about 75°. As the fruit begins to colour, give more air by degrees and less moisture, until it is ripe, when plenty of ventilation and a cool, uniform temperature will be all that are required. Next year the Vinery may be shut up on the 1st of January; in the season after that, on the 1st December; and the next after that, the first week in November, when the Grapes will ripen in April. This is the earliest period at which Vines should be started, for, after being forced two or three seasons, they may be had ripe by the third week in March. About the middle of February give the inside border a good watering with weak liquid manure at 75°, as the fruit commences its second swelling, and in ten days or so it will begin to colour, and swell more rapidly than at any other time. Open the front ventilators a little on every favourable opportunity; it keeps the air in motion, retaining both heat and moisture, which, if ventilated at top, would escape, rendering necessary more fire-heat, which creates a parched atmosphere, thus checking growth and rendering the foliage more liable to red spider. As soon as the Grapes are ripe, take the shutters and half the litter off the outside border, and when the fruit has been all cleared out give the inside a good watering with weak liquid manure to encourage growth and plump up the buds. Maintain a growing atmosphere for a month or so, as it prolongs the growth and preserves the buds from breaking in the autumn. Remove the remaining half of the litter carefully, as the roots will, no doubt, have run into it; if so, comb it out with the fingers, and cover the roots with two or three inches of fresh loam, and the same with half-rotted manure. The Vines being in full leaf, the roots will take hold of the loam at once, and accumulate vigour for future crops, keeping them from pushing into growth in August and September. This is the most difficult part with which an inexperienced hand at very early forcing will have to contend; for, if care be not taken, every bud on the Vine will push into growth if ripened in March; whereas, if not ripened before the middle of April, they will merely push a few of the terminal buds, which should be rubbed off as fast as they grow, for if allowed to go on they weaken the Vines for the following season. If inclement weather occurs in the early part of July, put the shutters on the outside border (placing a brick on edge at each end) to protect the border from rain, and at the same time to admit a free circulation of air, which keeps the roots dry and quiet. About the middle or end of September, according to the state of the weather, take off the shutters, and remove the bricks. If leaves be plentiful, but not ready until the end of October, put on 6 in. of litter, covering it with the shutters, to preserve the sun-heat in the border; but when the leaves are ready, and in a dry state, push the litter into a row at each end of the border, and fill in between to the depth of 15 in. with the dry leaves; then cover with the shutters; the litter at each end will prevent the leaves from blowing about, and will keep in the natural heat of the summer. Late Grapes require the same treatment as early ones, as far as regards temperature, but as little fire-heat as possible should be used. Ventilate early and close in early the sun's heat in the afternoon, as nothing invigorates Vines so much as such treatment. In wet, cold seasons a little fire-heat is beneficial, particularly in regard to finishing off the fruit, and ripening the wood, as well as keeping the Grapes.

Pot Vines.

There is not now the same necessity for these as there used to be, as summer Grapes can now be kept so late. Still, they are useful to bring in before the permanent Vines, in March and April, and they are also very useful when Vine-borders have to be removed, or for placing at the end of a stove or warm greenhouse in summer. Their cultivation differs in no way from that for permanent Vines, except that they should stand on a bed of leaves, or bark, which furnishes a gentle moist heat, and after the pots get well filled with roots, they should be fed freely with weak liquid manure.


G. WEINGARTNER SC.

The large-leaved Panicum (P. plicatum).

Diseases and Insects.

Mildew.—Vines are liable to both diseases and insects, and in both cases prevention is better than cure. Mildew is a very destructive disease if neglected. In our heavy soil we have never the least signs of it, although in light soil I have seen it affect Vines badly. Painting the hot-water pipes with fresh slacked lime and sulphur soon destroys it; the best preventive is well-drained borders and a sweet healthy atmosphere.

Shanking.—This is another disease which often causes disappointment at the finish, as it attacks the stalks of the berries as the fruit begins to colour, arresting the ripening, and eventually causing the berries to drop off. In some cases it is caused by the roots being in an uncongenial soil, or getting into a wet subsoil, to prevent which I always prefer concreting the bottom of the border. A good preventive is well ripening both wood and roots, thus preventing rank growth, the fruit on which is most liable to shank.

Rust.—This is scarcely a disease, though a disfigurement. It is generally caused by over-heating the pipes, or sulphur left on them from the previous season, or cold draughts when the berries are setting.

Warts or Excrescences.—These occur on the undersides of the leaves; some contend that they do no harm, but I prefer being without them, as the leaves cup and are arrested in their growth. They are caused by the atmosphere being over-charged with moisture and by insufficient ventilation.

Scalding.—To this some Grapes are more subject than others; it occurs at stoning time. Early ventilation and a cool atmosphere are the best preventives.

Insects.—The most formidable insect that attacks the Vine is the Phylloxera, and the best preventive in my opinion is raising one's own Vines.

Red Spider.—This, if neglected, soon spreads all over a house, destroying the foliage and weakening the Vines. A want of root action and a dry atmosphere encourages it; in guarding against it, cleanliness, and painting the hot pipes with sulphur and milk, or with new slacked lime is best, but such mixtures are difficult to clean off the pipes.

Mealy Bug and Thrips.—These are often introduced into Vineries through growing plants in them, and if once they get a footing they are difficult to get rid of until the foliage drops. If the bug get into the bunches, take a light peg, with a small piece of sponge tied to the end of it, dip it in spirits of turpentine, and merely touch the insect; this will destroy it.

Waterdale, St. Helens, Lancashire. J. Smith.

THE LARGE LEAVED PANICUM (P. PLICATUM).

This, like many other of the more ornamental forms of Grasses, has come much into favour of late years for mixing with flowering plants in stoves and conservatories; to have it in perfection it requires some warmth, especially in winter. Although it will live and thrive out-of-doors in a warm summer, it will be found to be most generally useful grown as a specimen plant in a pot. It is of the easiest possible culture, succeeding well in any kind of soil that is sufficiently porous to allow water to pass freely through it, and with water it must be plentifully supplied, as from its free rooting character it naturally needs a fairly moist soil. It may be increased by division.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Ground Work.—I would urge the necessity of no time being lost in getting on with any new work or alterations in shrubberies and pleasure grounds that may be contemplated. Where everything of this sort can be finished before the close of the year, it makes a full season difference in the growth that trees and shrubs make that are thus early planted, over others that are put in late in the spring after a protracted winter's frost. Undoubtedly, the best time for planting evergreens is considerably past, yet, with young stock that has been well prepared for removal by frequent transplantings, such as are usual in the best nurseries, there need be no hesitation; but, in the case of large evergreen shrubs, especially Hollies, that have stood for many years without removal or preparation by their principal roots being shortened back within the last twelve months, I should recommend their not being moved until the spring is considerably advanced, or, still better, as soon as may be after the middle of the ensuing August. No doubt large shrubs can be, and are, frequently moved under the most adverse conditions as to time, without any preparation, and, in time, recover from the effects of the severe ordeal to which they are thus subjected; but, under such treatment, immense numbers die outright, or remain for years in a stunted state. In the case of all trees and shrubs that have already been moved, they should be gone over to see that their supports are sufficient—the recent storms which we have had will show any defects in this matter, and, if not at once remedied, the roots will be seriously injured. Where new lawns, bowling greens, or croquet grounds have to be made, or worn-out turf replaced on those already in existence, if such work be carried out forthwith, instead of being deferred until spring, the result will be immeasurably more satisfactory, and the labour involved less. Where turf-laying is deferred until late in the spring (as it must needs be in the case of a severe winter), no matter how much attention may be given it, the Grass never looks well the first summer, and all the beating and rolling that it is possible to give in a dry season will not prevent the unsightly openings that become apparent where the turves are jointed together. Wherever new gravel has to be laid on to any great extent, now, when the leaves are all fallen, and comparatively little sweeping will be required through the winter, is the best time to do it. It may be urged that by deferring it until spring, it will have a fresher appearance through the summer; but, as against this, spring, with its numberless calls in any garden large or small, furnishes matters enough that demand attention, without the interference of works of a permanent kind. In respect to gravel walks, I would again urge that however good the quality of the gravel, in both texture and colour, may be, it will never look well long, or be comfortable to walk upon in wet weather, unless the under drainage be efficient.

Herbaceous Borders.—Where anything like a good assortment of herbaceous plants is grown, it is essential, except in the most favoured localities, to afford some slight protection to many of them, for, although they may not be killed outright in our severest winters, still it often happens that they are injured to an extent which has a weakening influence. The old flower-stems of all that are decayed, for mere appearance sake, should be partially cut away, but in thus denuding them of their tops it is well to bear in mind that we deprive them of the ability to protect themselves, as these dead stems not only have a considerable influence in warding off frost from the crowns and buds already formed for next year's growth, and which lay thickly immediately below the surface, but, being often hollow, when cut away they at once act as receptacles for water, holding it in a position in which it is most likely to be injurious. For these reasons it is well to sacrifice something in appearance, and not cut away these decayed stems so close as is usually done. As regards protecting material, there is nothing more effectual than the leaves of deciduous trees, especially those of a hard nature, such as those of Beech and Oak; but, where these are used, to avoid the continuous litter they make by being blown about, they should have a thin layer of half-decomposed stable litter scattered over them. This will retain them in their places and keep the plants snug for the winter; moreover, the fertilizing elements from the manure will be washed down into the soil, and in this way invigorate the plants. Early in spring the whole of this covering should be forked into the ground a few inches deep, without disturbing the roots. Where leaves are not to be had, Fern, or where procurable, Furze, cut in small pieces and strewed over the ground is one of the best materials that can be used for protective purposes. These failing, it is necessary to resort to ordinary litter, but where this is employed it should be thrown together in a heap for a few days to partially ferment, in the same way as if intended for hotbed making. By this treatment it acquires a dark colour, thus doing away with the objectionable straw-like appearance which it has when used quite fresh; a couple of inches of such material laid over all bulbs will be an advantage to them.

Frames.—Carnations, Picotees, and summer-struck Phloxes, and Pentstemons should have the lights kept completely off them except during severe frost, or when extremely wet, as it is not well to let the soil get saturated, for if it becomes frozen in that condition the roots are more liable to get injured, hence it will be obvious that the drier the soil is when severe frost occurs the better.

Kitchen Garden.—Where Rhubarb is required early, some roots of it should now be put into a little warmth; this is requisite, as it will not come on so soon with mere protection in the way that it will when we get some weeks into the new year; if the roots for forcing were dug as soon as the leaves were decayed, they will push up with the application of less artificial warmth than if got up at the time when they are wanted to be put in for forcing. A bed of leaves, similar to that which has been recommended for Seakale, will answer well for the Rhubarb; the objection to forcing Rhubarb in a Mushroom house—although often practised—is that the fumes given off by the fermenting manure always communicate a disagreeable flavour to it. A little more Seakale should be put in; it is much better to start as much as will be required once a fortnight or three weeks, than to put in more at one time, as if the produce be not used when ready it gets long and tough. Where any weeds have sprung up amongst winter Spinach, Onions, Lettuce, and Endive, these should be removed by hand, the ground being too wet now to effect their destruction by hoeing; as even if cut with the hoe and allowed to remain, they very soon take root-hold again; but, after this hand-weeding, it will be an advantage to hoe the surface over, selecting a dry day for the purpose.

Cabbages.—The earliest planted should have the soil drawn close up to their stems as high as the under leaves; this is the more necessary where the action of the wind has loosened the plants, the effect of which is, that if left in this state and the soil becomes congealed by frost, the stems chafe against the frost-hardened soil, and in this way they get killed. Half the losses that are experienced with young Cabbages during severe winters arise through this cause.

Winter Spinach.—Where the plants of this are too close in the rows, they should be immediately thinned out to something like 4 in. apart; if allowed to remain too much crowded, they are naturally weakened thereby, and get destroyed if a severe winter ensues. It is well to bear in mind that it is now advisable to take every precaution to insure the well-being of all winter and spring crops; the more than usually wet, mild weather which we have had has kept everything in a soft-growing state up to the present time, rendering them more than ordinarily susceptible to destruction, should we have a hard winter.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

December 3.—Getting shelves in early Peach-house filled with Keen's Seedling Strawberries. Cutting down old trees, grubbing up their roots, and trenching the ground ready for large specimens. Washing Vinery lights ready for painting. Finishing pruning, and nailing Plums and Cherries on north walls.

Dec. 4.—Cutting all the bunches of Grapes in the Mrs. Pince house, and putting their stems in bottles in the Grape-room. Giving early Peach-house a good watering. Covering up a small piece of Parsnips to keep the frost out. Moving large shrubs from nursery to pleasure grounds. Getting another bed of Seakale covered up with pots. Getting all prunings and rubbish burned up.

Dec. 5.—Looking over all seed Potatoes and removing any that are going bad. Tying mats ready for covering. Making labels and pegs. Cutting shreds, and pointing nails. Sorting Peas. Cleaning seeds. Looking over Onion store, and removing any that are bad.

Dec. 6.—Sowing Mustard and Cress. Getting a few more Hyacinths into gentle heat to get them forward. Commencing pruning and nailing Pears on east and west walls. Getting some large Apple and Pear trees, growing too grossly, root-pruned. Getting manure on to land whilst the weather is favourable.

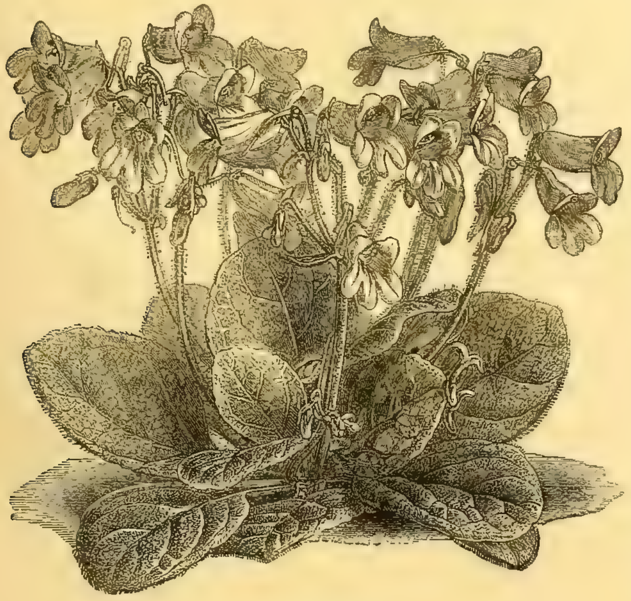
Dec. 7.—Putting in 100 pots of French Beans. Making a new Mushroom bed. Clearing up flower-borders, forking them up, and planting them with bulbs and spring flowers. Pruning Gooseberry and Currant bushes. Turning up together leaves and long manure for hotbeds. Getting on with deep trenching as fast as the weather will permit. Looking over all the Pines, and giving them a little water where required.

Dec. 8.—Looking over Grapes in bottles, taking out any bad berries, and filling up the bottles with water where required. Looking over fruit-room and removing all fruit that is beginning to rot. Fruit in use for dessert—Pines, Grapes, Pears, Apples, Medlars, and Nuts.

THE INDOOR GARDEN.

CHIRITA SINENSIS.

This is an evergreen, herbaceous, Chinese Gesnerad, the leaves of which spread not unlike those of a Gloxinia; the flowers, which are blue, are also somewhat similar in shape to those of a Gloxinia, but they are produced in bunches on the extremities of erect stalks, that rise well above the foliage, and, as these are thrown up freely, the plant has a very effective appearance. It blooms in summer, and is a useful subject for conservatory decoration. It thrives well in a mixture of peat and loam, to which has been added a little leaf-mould and sand; when in active growth it must not be allowed to want for water, or the advancing flowers will be injured. After blooming it should be kept somewhat drier at the root, but, owing to its evergreen character, it must not be allowed to get so dry as to cause the leaves to flag. It does best in a moderate temperature. There is also a variegated form of this plant, the leaves of which are handsomely marked. B.


Chirita sinensis.

WINTERING BEDDING PLANTS.

I never had bedding plants in better condition at this time of the year than I have them now, and I never had plants that were less coddled. With the exception of a few odds and ends, all our stock of these plants are in boxes 2½ ft. long, 1 ft. wide, and 3 in. deep. Each box has six holes in the bottom, large enough to put the finger through. In the second week in August, a piece of crock was put over each of these holes; the boxes were filled with a mixture of loam, leaf-soil, and sand, and then about fifty cuttings were put into each. As soon as the cuttings were put in, each box was watered and set outside, fully exposed to sun and air. Here they remained until the middle of October, when they were shifted into a Vinery, from which the Grapes were just cut, and there they are now. Through being so much exposed to the air, the plants are not drawn up; on the contrary, every one of them is dwarf and bushy, and although there are thousands of them, there is not a single blank amongst them, and no dead leaves have yet been gathered from them. A little artificial heat is admitted two or three times a week, and the top and bottom ventilators are open night and day, unless it is extremely cold. They are not watered oftener than once a week, sometimes not so often. It is not the hardiest of green-leaved Pelargoniums that are thus treated, but many choice variegated ones as well. Alternantheras are often found to winter badly; hundreds of them were put in boxes like the Pelargoniums; they were rooted in a close frame, and then hardened off. They are now along with the Pelargoniums, and so luxuriant that not a particle of soil can be seen, looking down through the plants, and they are so bushy that the little branches are hanging over the sides of the boxes. Mesembryanthemum cordifolium is equally healthy under the same treatment, and so are the different kinds of Iresines. I attribute all this chiefly to growing them hardy at first, and afterwards not putting them into any close place to make them tender before the winter had set in. Last year most of our Pelargoniums were rooted and wintered in small pots, and it took four times as much space to accommodate the same number of plants in that way as in the boxes, and I find that they keep much better in the latter than in pots. In March the Pelargoniums will be potted into small pots, and the Alternantheras given more room in the boxes in which they are now growing. Cambrian.

Lycopods on Tree Stumps.—Pyramids of Lycopods are usually made by placing pans or flower-pots of different sizes one above the other, but good effects in this way may also be obtained by procuring good big stems of dead Tree-Ferns, or of other trees which have a loose bark that will hold moisture. They should be potted, a small pan being secured on the top of the stump in which to plant the Lycopod; the margin left between the pot and the stump may be planted with Ferns, and a plant of the graceful Nephrolepis exaltata may be placed in the middle of the pan; on the top any of the free-growing Selaginellas may be employed in this way, or Ferns with creeping rhizomes may be used with excellent effect.—S.

Bouvardias Planted Out.—By planting out Bouvardias during summer in good, rich garden soil, and keeping them well supplied with weak liquid manure, much better plants can be obtained for winter-blooming than by growing them in pots. In the Pine-apple Nursery we lately saw a large house full of plants which had been thus treated, and which will soon make a fine display. They were struck in February, planted out in June for the summer's growth, and potted up during the first week in September; they were then placed in a cold frame for a few weeks until re-established, when they were removed to a lean-to house, where a little heat can be given them to assist in opening their flowers. All the varieties may be treated in this way with the best results.

Stephanotis as a Basket-plant.—Among the many plants used for conservatory baskets, the Stephanotis is seldom or never employed in that way. It has, however, occurred to me that it might be made one of the best of basket-plants. It would, in the first place, be necessary to obtain plants of it with several good shoots rising from the bottom; these must be trained up stakes inserted in the pot, for the plants would perhaps be best grown in pots until they began to flower, when they could be set in the baskets. In order to insure the plants flowering freely, the wood must be thoroughly ripened by being exposed to sun and air during the summer-time, either near the glass in a cool house, or trained on a south wall out-of-doors. The baskets in which they are to be placed should be prepared previously by having a pot, of the same size as that in which the Stephanotis is grown, placed in the centre. This should be packed round with lumpy peat and Sphagnum, and planted with Ferns and Lycopods, so as to hide the outside of the baskets. When all is ready, the empty pot can be replaced by the one in which the plant is growing. The branches of the Stephanotis might be arranged so as to droop equally all round the sides; and, when in full bloom, plants thus treated would have a striking effect in a moderately warm conservatory, where they would last in beauty for a long time. I have never seen the Stephanotis tried in this way, but I see no reason why it should not succeed.—S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Hibiscus Lamberti.—This is one of the most useful of winter-flowering stove plants; it has large, deep green leaves, and brilliant scarlet double blossoms, which are very valuable in a cut state.—S.

Fern-leaved Cupania (C. filicifolia).—This is one of the best green-leaved plants for dinner-table decoration that can be grown. Its fronds are large, graceful, and spreading; and, although bushy plants of it cannot be obtained, straggly plants, cut closely down, will throw up an upright shoot, and thus make handsome specimens.

Standard Epacrises.—These are seldom met with, but grown in this way, Epacrises when in flower have an attractive appearance. We lately saw some in the Exotic Nursery, Chelsea; they had upright stems 18 in. in height, and large bushy heads. When once formed, they require no other training or tying, and when in flower the branches quite droop under the weight of blossoms which they produce. When used for vases or table decoration, for which they are very suitable, the surface of the pots should be hidden by mixing a few Ferns with small flowering bulbs, such as Lily of the Valley, Squills, &c., or cut flowers might be used for the same purpose.—S.

PLATE CII.

CHINESE PINKS—EASTERN QUEEN AND CRIMSON BELLE.

Drawn by H. NOEL HUMPHREYS.

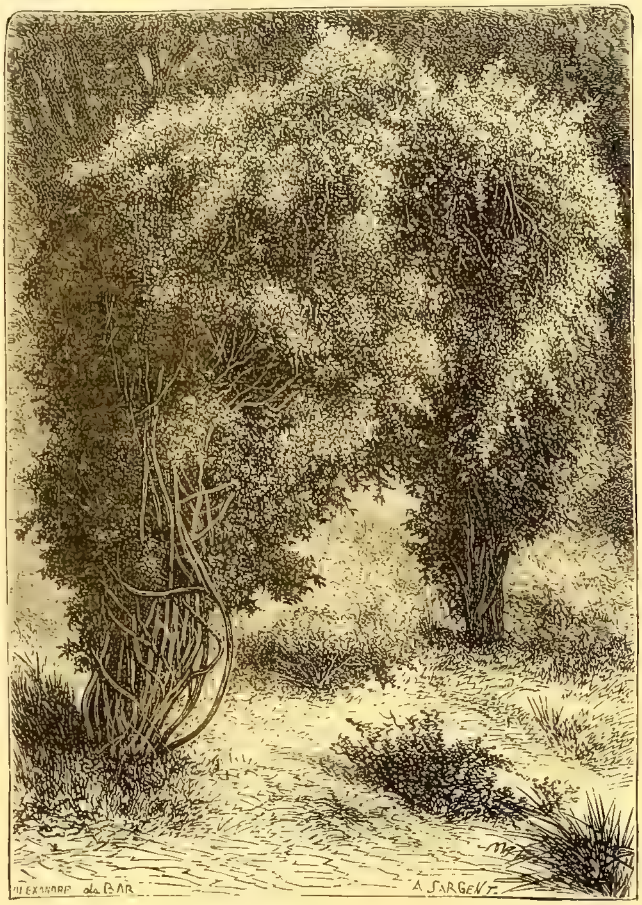
During the past autumn, Messrs. Carter, of Holborn, sent us some beautiful Chinese or Japanese Pinks, plants which, in such forms as we figure, well deserve culture. Mr. Noel Humphreys succeeded in catching some of their beauty for us, and the plate we now publish, after his water colour drawing, will give some idea of their charms. It is, however, even with this aid, very difficult to give an idea of the singular beauty of colour in the form with the flakes across the petal. As regards their production, Mr. Robert Gardiner, Messrs. Carters' manager at St. Osyth, writes to us as follows :—Many years ago I took great interest in the cultivation of Dianthus Heddewigi as a charming flower worthy of great care in keeping it true to name. As we grew it largely, I had a good opportunity of noting all its variations, and I discovered a tendency towards two distinct and very beautiful forms, which I lost no time to improve by careful and continued selection. It was several years, however, before I met with complete success in reaching that which I aimed at, and in establishing their respective characters; Crimson Belle and Eastern Queen are the result of my efforts. Their cultivation is very easy. Sow under glass in Febuary, with very little or no bottom-heat, give air freely during open weather, and plant out in April in well-cultivated soil; but it is not necessary that it should be rich. Place the plants from 9 in. to 12 in. apart each way, and they will form compact tufts, which will be quickly covered with blossom. Encourage the formation and growth of laterals by pinching off decayed flowers, and the result will be a mass of blossom through the whole summer, probably till November. Some sow the seeds in autumn, and winter the young growing plants in frames, or under hand-glasses, hardening them off by degrees in spring, until they have become fully established.

Rivina humilis.—This pretty berry-bearing plant is largely grown in the gardens at Hatfield for decorative purposes; and, considering its easy culture, it might be grown much more extensively in other places than it is. For market purposes, too, it would doubtless be a good plant, for, when well furnished with its bright scarlet berries, few plants are more effective for room decoration. Strong cuttings of it should be inserted early in spring, potting them on when rooted, and always stopping the shoots, allowing them to break again before each shift. 5-in. or 6-in. pots are the best sizes in which to grow them, and the soil should be sandy loam and leaf-mould. A warm temperature is needed until the plants have fruited.—C.

TREES AND SHRUBS.

CLEMATISES ON TREES.

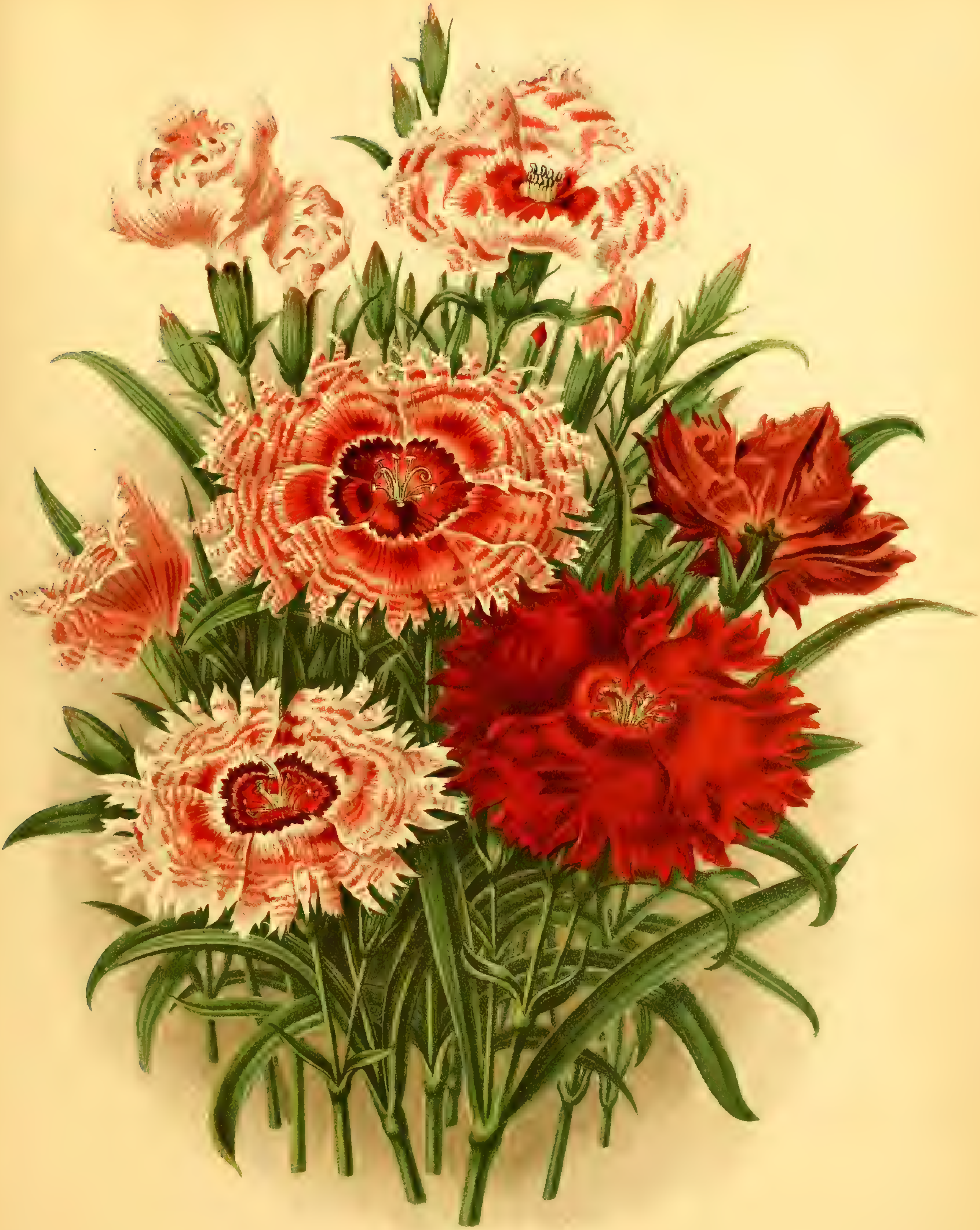
The accompanying illustration is drawn and engraved from a photograph, taken last May, showing an old and vigorous plant of the handsome and hardy Clematis montana allowed to have its own way to some extent. This climbing shrub, of which the large-flowered variety called grandiflora is grown here and there on walls, is most precious for those who wish to garland trees and stumps and hedges with lovely flowers. It is as hardy and free as the common English Clematis Vitalba. The sketch will also suggest to many various ways in which hardy climbers may be used to produce similar beautiful effects. Other families of climbers might be named as equally useful, but the Clematises are so numerous, so hardy, so beautiful in flower, and so singularly varied in the colour and form of their blossoms, that whole wild gardens of beauty may be formed of them alone.



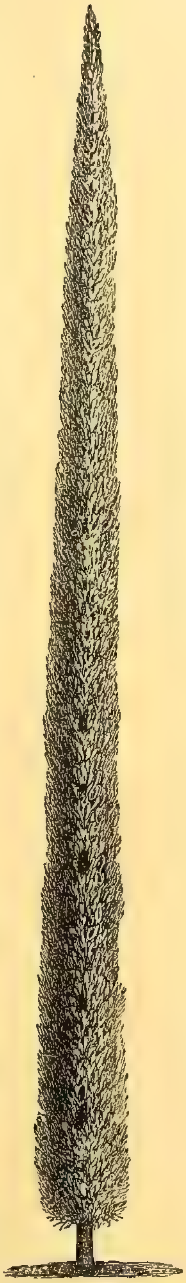
Clematises on trees in May.

YEWS—THEIR USES.

The Yew ranks with the Holly as an evergreen shrub, only that the varieties of it are hardly so numerous, though they present, perhaps, a greater diversity of aspect. Like the Holly, too, most of the varieties are very accommodating subjects for forming hedges and specimens, and even dwarf edgings, submitting to the shears for many years—though the partial clipping of the trees, or training them in fantastical shapes, is not to be recommended, except when they are used in geometrical flower gardening, as at Harewood and other places, where the plants are shaped like pyramids and cones, necessitated by the highly artificial but questionable disposition of the flower beds and architectural adjuncts of the garden. The fine old Yews in the old garden beside the river at Hatfield are a very interesting sight; their growth has not been much restricted or interfered with, but marvellous pains have been taken to form and preserve the shadowy aisles and nooks that penetrate their undergrowth in all directions. Altogether, the wilderness there is a very pleasing retreat, and presents an aspect differing totally from the stiff and formal topiary work which is still a feature of some old gardens in this country. For general planting, the common English Yew is still the best, as it grows fast and furnishes quickly. Like all the other Yews, it delights in a good deep but well-drained soil, and attains great age under such conditions. On thin and very dry soils, the tree is less luxuriant, and soon gets thin at the top, unless top-dressing is resorted to, to provide the roots with food and sufficient moisture. We have known old trees renovated in this way. The Yew is not a good town tree, nor does it thrive in smoky districts. In some of the colliery and manufacturing districts of the north we notice that mostly all the old trees are in a dying state, and few young trees are planted. If the hand is rubbed upon the



foliage it is soon blackened with soot, which, no doubt, is the destroying agent in this case. The common variety makes a good hedge if planted thick enough at first. The plants should not be cut in too much for a year or two till they form a bottom, when they may be clipped in a little—top and sides—annually, taking care to keep a straight and even surface. In cases where the hedge faces the spectator chiefly from one side, as when it is placed between the wood or fields and the garden, or to hide unsightly objects, the hidden side is that too frequently neglected and allowed to grow, while the garden side is clipped regularly. Now the consequence of this neglect is that the vigour goes to the hidden side, and the clipped side becomes thin and unsightly. To keep such hedges in good condition, they must be regularly clipped on both sides. Of characteristic varieties of the Yew, the Irish Yew is one of the most ornamental and best known. It is very suitable for planting on lawns or in shrubberies; but the plants in any case should be tied to a short stake or iron rod at first to keep them straight, and the branches should be tied with a piece of band to keep them from straggling. In a good soil this Yew attains a great bulk and a good height. There is now a golden variety, of the exact type of the Irish Yew, raised, a number of years ago, at Hansworth Nurseries. It is a good companion to the green variety, and an equally good grower. The variegation is of a fine, bright golden colour; and, altogether, it is a great acquisition. At the same nursery there are also many hundreds of seedlings of the golden variegated type, numbers of which have not yet found their way into commerce. In all of them the variegation is of a bright golden hue, and hardly any two seedlings are alike in habit, some resembling the Irish Yew, some bushy, and some pyramidal in shape; but all are more or less vigorous, and suitable for ornamental planting. Among other named sorts of the variegated kind must be mentioned Taxus argentea and elegantissima, both silver-striped and very ornamental; and the deep green T. adpressa, which affords an excellent contrast to the others, and is in itself very ornamental. Other good sorts for planting in mixed shrubberies are T. Dovastoni (weeping), epacrioides, ericoides, and japonica (both bushy), pyramidalis, and yellow-berried (these are green). The variegated varieties not already named are Dovastoni variegata, elegantissima, elegantissima fœmina and superba, Washingtoni, golden striped, and a variegated variety of pyramidalis. S.


A Columnar Cypress.

A Columnar Cypress.—This curious form of the common erect Cypress is figured by M. Carrière in the "Revue Horticole." Its branches are all transformed into branchlets and so closely growing together that they quite conceal the stem, and form a dense narrow column of vegetation. M. Carrière calls it the Cereus-formed Cypress, and states that it was raised by M. Ferrand, of Cognac (Charente). Plants of it are also in Messrs. Thibaut & Keteleer's Nursery at Sceaux, and, for all we know, may be in some of our own nurseries. It is stated to come true from seed.

Large Tulip Trees.—Referring to this subject, allow me to state that there are several Tulip trees in the pleasure grounds at Margam Park, the largest of which is 13 ft. in girth, and close upon 100 ft. in height.—A. P.

HYBRIDISATION OF PLANTS.*

Hybridisation has received so much attention of late years, principally through the efforts of Mr. Darwin and a few others, that it is difficult to turn up a trade catalogue or trade advertisement without finding every seedling plant described as being the result of careful cross-fertilisation. So much is this the case that one is apt to come to the conclusion that the whole vegetable kingdom will soon become an indescribable mass of confusion. It is therefore necessary to bear in mind that two distinct classes will not cross-fertilise each other, that bi-generic hybrids are very scarce, and that the offspring of distinct species, when crossed, are, like bi-generic hybrids, generally self-impotent. Although in this latter respect they are no worse than some varieties, nevertheless, the above is the general law. This, however, is very often neglected, or mistaken by horticulturists for the well-known law of variation, to which plants are liable under cultivation; so plastic are some plants when cultivated that they are often mistaken for hybrids. This is well illustrated in the case of the Hollyhock, which, although, so far as is known, has never been crossed by any other species, has yet produced, in the hands of such men as Mr. Downie, Mr. Chater, Mr. Wm. Paul, and others, as many distinct and beautiful varieties as can be found in any class of florists' flowers. The Dahlia, also, may be instanced as the descendant of one original species. The Phlox—of which we have two distinct species cultivated by florists, namely, the P. suffruticosa, or early flowering, and the decussata, or autumn flowering, both from North America—has produced numerous and distinct varieties; yet we have it recorded, on the authority of Mr. John Downie, who was about the first to raise improved varieties, that no intercrossing of species has taken place in their production, each being the pure descendant of either species. The modern Pentstemons are derived from seminal varieties of P. gentianoides; and so on. Unfortunately, the history of the great majority of cultivated plants is unknown, but sufficient has been said to show the necessity of being careful in crossing plants, to remove all the stamens from the flowers to be used as the female a few days before they open, and afterwards protecting them from insects. If this be not attended to, the whole becomes a mere matter of chance. Indeed, without this care, we may be retrograding, for the offspring may not be so good, as if the very best flowers were marked, as the most of skilled florists do, and the result left to the inherent variability of the plant, and methodical selection when the seedlings are in flower, a circumstance which has hitherto done more for the improvement of florist-flowers than has been accomplished by hybridising. Mr. Darwin observes:—"When animals or plants are born with some conspicuous and firmly inherited new characters, selection is reduced to the preservation of such individuals, and to the subsequent prevention of crosses; but, in the great majority of cases, a new character, or some superiority in an old one, is at first faintly pronounced, and is not strongly inherited; and then the full difficulty of selection is experienced. Indomitable patience, the finest powers of discrimination, and sound judgment must be exercised during many years, and a clearly predetermined object must be kept steadily in view. Few men are endowed with all these qualities, especially with the powers of discriminating any slight differences. Judgment can only be acquired after long experience, but if any of these qualities be wanting, the labour of a life may be thrown away."

Variability.

With regard to variability as distinguished from hybridism, numerous instances could be given, such as the Peach having produced the Nectarine, the various kinds of Gooseberries in cultivation, Plums, Cherries, and the numerous varieties of Apples and Pears, all of which have been obtained by careful methodical selection. It is also well known that in a single bunch of Grapes may be found white and black Grapes. So variable a subject, therefore, requires both care and patience. I find Mr. Thomson, of Clovenfords, has recorded the fact that in order to raise four good sorts of Grapes he had to fruit 400 plants, the seed parents of which he had carefully fertilised with distinct varieties. Time and disappointment are often saved by being careful. In making experiments with Lilium auratum and L. lancifolium, by placing the pollen of the one on the stigma of the other, and excluding insects, I never got a single capsule to swell; not only so, but I found that pollen from L. lancifolium acted like a poison on the stigmas of L. auratum, so that in about eight hours the stigmas had a blackened appearance, and the flowers began to fade long before they would have done if self-fertilised; the same thing occurred in trying to cross Primula japonica with many species and varieties of Primula; I did not observe the poisonous results as in the last case, but I never was able to get a single capsule. In the genus Passiflora, the swelling of seed-capsules is no sure indication

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Read by Mr. Robertson Munro at a recent meeting of the Scottish Horticultural Association.

that the seeds will be fertile; for, in attempting to cross such hybrids as Impératrice Eugene, Comte Nesselrode, floribunda, and others, with pure species, I found capsules freely produced, but in no case did they contain good seed. In some, as in P. floribunda, the outer walls of the ovary were alone developed, while, in the case of Impératrice Eugene, in addition to the outer walls, the albumenous substances, with rudimentary seeds, were freely produced when pollen of P. alata was applied. It not unfrequently happens in some classes of plants that the anthers discharge the pollen before the flowers open, a fact which I first observed in reference to a plant which has, so far as I am aware, baffled hybridisers, namely, Rhododendron Edgeworthi, which may account for the fact that this plant has never been crossed with any of the species, although its pollen has been found effective in numerous instances in fertilising other species. R. Thomsoni I found to emit pollen for days before the flower expands, and from the viscid orifice of the stigma to which pollen was seen adhering, I would infer that it must be generally fertilised with its own pollen. It is from considerations like these that I would advise every one to exercise the greatest caution as regards receiving loose statements about hybridising, which will not bear close investigation; and this is equally applicable to a kindred subject, namely, graft hybrids.

Grafting Potatoes.

A subject which created some interest a few years ago, and which still crops up, was the grafting of Potatoes, from the fact that some Potato growers asserted that they had by this means raised hybrids or Potatoes intermediate between the scion and stock. With the view of testing the accuracy of such statements, I obtained through the kindness of Mr. Syme all the varieties in Messrs. Lawson's extensive collection. I selected thirty-four distinct sorts, and began by placing the most distinct varieties together. I first took all the eyes out of the one that was to be the stock, and cutting various pieces out with a sharp knife, I took a corresponding piece out of the one that was to be used as the scion. These were fitted together as neatly as I could by tying; but, previously to that, I passed a piece of wire through both so as to hold them the more firmly together. After doing about a hundred in this way, it occurred to me, in order to make doubly sure, to ask Mr. James Cooper, who for upwards of thirty years acted as budder and grafter to the Messrs. Lawson and Sons, and who is well known as one of the most successful grafters in the kingdom, to graft some of these Potatoes for me; but, after doing thirty-six tubers, he threw them aside saying that it was all nonsense. Some of these were potted and placed in a sharp bottom heat, others were placed in suitable soil in a cold frame, and some were planted in the open border. Those in heat were examined after they had made about 6 in. of growth; those in the cold frame, as well as those in the open border, were allowed to mature their tubers, but in no single instance could I trace the least change, nor yet could I find that the scion and stock had united; and this was also the case when I cut the eyes out of the one-half of a single tuber, cutting it in two, and tying the two halves together, so that there could be no misfitting of parts. I found in numerous instances that eyes had been formed on the so-called stock, but in such instances the young tubers were the same as the stock.

Graft Hybrids.

In reference to other forms of grafting, I never did much. Mr. Cooper, however, informs me that during the time he was in the Messrs. Lawson's nurseries, he grafted every year upwards of 45,000 stocks, which in thirty years is upwards of 1,350,000, and yet he never observed a single instance in which the scion exerted any influence on the stock, or conversely the stock on the scion, beyond the well-known fact that the scion sometimes grows more rapidly than the stock. I think this worth recording, more especially as Mr. Cooper had every opportunity of observing any changes, if such took place. I do not, however, dispute the existence of graft hybrids to a limited extent; the fact that the variegated Abutilon, when grafted on a green Abutilon has exerted sufficient influence on the stock to produce, from the eyes below the union, variegated branches, as well as the case of the well-known Cytisus Adami, would seem to indicate the existence of such hybrids; but, judging from such a statement as that made by Mr. Cooper, it must be of rare occurrence. Seminal hybridisation is not so restricted. Dean Herbert, Mr. Isaac Anderson Henry, and others showed long ago that hybrids between two distinct species could easily be produced; but to Mr. Darwin is due the credit of being the first to point out the beautiful adaptations furnished by Nature for the express purpose of providing that cross-fertilisation will take place. Of this no class of plants will give a better illustration than the Orchids usually cultivated in our stoves; from the construction of some of their flowers it is a physical impossibility that they can be fertilised without insect or other agency; and this is not all, for I found, on placing the pollen of many of them on the stigmas of the same flowers, that they would not produce capsules, yet the pollen was good, for with it I could fertilise other flowers on distinct species; their ovaries were good, for they could be acted on by pollen from another species. Three species of Oncidium in the Edinburgh Botanic Garden were found to be self-impotent, yet capable of being intercrossed in various ways. I have fertilised hundreds of flowers of Oncidium flexuosum with its own pollen, and no capsules were produced; but, when fertilised with pollen from Oncidium divaricatum, another self-impotent plant, it produced plenty of capsules full of apparently good seed, and this was also the case when fertilised with such distinct species as Oncidium Papilio. Maxillaria atro-rubens, also a self-impotent plant, could be fertilised with Oncidium sphacelatum. Orchids have, however, been considered by some to be an exception, but many other plants are found to be self-impotent, and yet capable of being self-fertilised by pollen from other species. Lobelia fulgens and some species of Verbascum have been found to be in this predicament. A very remarkable case in reference to this came under my own observation. Passiflora alata, a self-impotent plant, in the Edinburgh Botanic Garden, was for many years fertilised with its own pollen by Mr. James Munro, Mr. J. Scott, and others, but could not be induced to yield a single fruit. Mr. Donaldson, gardener at Keith Hall, Aberdeenshire, when foreman in the gardens at Taymouth Castle, had also a plant of this same P. alata under his care, but no fruit was ever produced. He grafted a plant of it on another species, probably P. quadrangularis, and ever after it produced fruit in abundance. After Mr. Donaldson went to Keith Hall he was anxious to try how seedlings from the Taymouth plant would behave, and procured some; but, after growing them for some years they failed to produce a single ovary. Pollen from the Keith Hall plant was tried on the plant in the Edinburgh Botanic Garden, and after some failures it produced a single pod full of good seed. The seedlings raised from this were, however, as self-impotent as the mother plant, but pollen from these seedlings was effective in every instance in fertilising the mother plant. Mr. Darwin says, in reference to this, "I have met with no case in regard to plants which shows so well as this P. alata on what small and mysterious causes complete fertility or complete sterility depends. I have fertilized P. alata with P. racemosa, and also with P. macrocarpa. Hybrid plants from these unions were distributed by the Messrs. Lawson and Son, and Mr. B. S. Williams. One of the male parents, P. racemosa, was self-impotent in the Botanic Garden, but when fertilised with P. alata or Tacsonia molissima it produced fruit, but in no case did it yield good seed. These are extreme cases, the species being self-impotent, but there are other causes which render it necessary that the flowers must be fertilised by the pollen of other flowers, or of distinct varieties." In Pelargoniums, the anthers discharge the pollen, and in the scarlet and crimson varieties it falls off twenty-four, and in some cases forty-eight, hours before the stigmas are in a fit state to receive it. The pink and white varieties, such as Christine and Madame Voucher, are exceptions, and this should be taken into account by those who send out new varieties, for it will be found that when planted out those in which the anthers fall off before the stigmas are developed last much longer in flower, and have less of the seedy appearance constantly observed in Christine than some others, and it is a remarkable fact that Christine and Madame Voucher will generally reproduce themselves true from seed. I have observed many species of Campanulas in which the anthers fall off in the same way, and Mr. J. Grieve who has cross-fertilised a number of species, informs me that he has also remarked the same fact. Mr. Bennet has mentioned several others, so that, in such cases, the sexes might as well be in separate flowers so far as fertilisation is concerned, and yet the male and female elements are quite capable of performing the functions of fertilisation. I seldom failed, on placing the pollen of any of the bronze kinds, such as Tricolor Pelargoniums, on the stigmas, in effecting a cross which was in nearly every instance apparent on the cotyledons, which showed a speck of yellow or white, or, in some instances, came too yellow or too white, and in such the seedlings quickly perished if the cotyledons were not closely observed; the second leaves frequently showed no signs of a cross having been effected, and it was sometimes a year after before the seedlings gave any indication of their hybrid origin. I may observe that I was not nearly so careful in crossing the Tricolor and Bronze on the green-leaved sorts as on the Zonal varieties, but capsules were produced, and the seedlings were nearly all yellow or white, that is, the colours became diffused throughout the leaves; this was particularly noticed in regard to such as Trentham Rose and Frogmore Scarlet.

Crossing Primulas and Auriculas.

Large numbers of plants are rendered more or less infertile by having their pistils and stamens of unequal length. This was first observed by Mr. Darwin in the genus Primula, to which he gave the name dimorphic and trimorphic; but they are better known under the names of pin-eyed and thrum-eyed. In pin-eyed flowers, the stamens are very short, and the reverse is the case in thrum-eyed kinds. Mr. Darwin made numerous experiments with Primulas and Linums, and found that, in order to render Primulas perfectly fertile, it was necessary to fertilise the long-styled or pin-eyed form with the short-styled or thrum-eyed form; and this he called a legitimate union. When the short styled or thrum-eyed was fertilised with the long styled or pin-eyed, less seed was produced. This he called an illegitimate union. I never myself made any experiments with the view of testing the relative fertility of the two forms when legitimately or illegitimately fertilised; but from one or two instances which have come under my notice, I find that they are capable of producing more good seed when illegitimately fertilised than Mr. Darwin's experiments would have led me to infer. I had a good yellow Polyanthus, which I wished to propagate by means of seed. It was long-styled or pin-eyed, and I had no other Polyanthus with long stamens and the colour equally good. I therefore fertilised the flowers with pollen from its own short stamens, and I had two fine capsules full of excellent seed, which I did not count; but I have, after some deaths, fifty-four seedling plants. In another case I had a plant of a yellow Polyanthus named Golden Gem, also a long-styled form; it had altogether four flowers, two of which I fertilised with its own pollen, and two with pollen from the long-styled form above mentioned. The two fertilised with their own pollen proved abortive; but the other two produced two capsules full of fine plump seed, the produce of which is now germinating. These operations were carried on under glass, and far from the beds of Polyanthuses; so there could be no interference in the way of foreign pollen. In the spring of 1875, I had upwards of 200 Primulas and Auriculas in one house, which I tried to cross in various ways, but the result was disappointing. I effected a cross on some of the Alpine forms of P. Auricula, such as P. intermedia fertilised with a border Auricula, but I never could get a cross between the two sections. I see in Mr. Darwin's new work, on "The Forms of Flowers," that Mr. J. Scott crossed P. Auricula with P. verticillata; I have tried to cross the two several times, but never could get a single capsule. I was also unsuccessful with P. cortusoides amœna. I tried it in various ways with P. sinensis, blue Polyanthus, P. verticillata, and the common Primrose, as well as with its own pollen, but I never got a single capsule. Most Primulas seed freely under glass; I never got P. nivalis, however, to seed, but Mr. Lindsay informs me that the plant of P. nivalis on the rock garden in the Edinburgh Botanic Garden has produced seeds. With regard to Primulas, they must, I think, be grown in the open air when trying them, as the least sunshine under glass makes them flag, and hence failure, in all such cases, will be the result.

Changing Seed.

In the case of the Brassicaceæ, the difficulty is to keep the different tribes from being cross-fertilised, and this is also the case with the different varieties of Wallflower, while the closely allied genus, Mathiola, the East Lothian Stock, for example, seldom gets intercrossed with other varieties. I have grown five distinct varieties of this Stock for 6 years, and although no care was taken to separate the plants, which were all grown in a single row, yet their seedlings have never failed to come true to colour, showing that even colours may become as constant in closely allied varieties as if they were distinct species. I think this is also of some importance in reference to the breeding in-and-in of plants, of which, until Mr. Darwin's work on "Cross-fertilisation" appeared, we were quite ignorant, or at least we had no record of any well-conducted experiments, although gardeners and farmers changed their seeds occasionally, with the view of improving their crops. Mr. Darwin has grown plants from ten distinct genera for ten successive years. From one set of them insects were excluded, so that they became self-fertilised, while another set was freely exposed and therefore became liable to get fertilised from distinct plants. Seeds from the two sets were placed on opposite sides of the same pot, and a careful record of their progressive development kept each day until they arrived at maturity, and Mr. Darwin forcibly sums up thus:—"If all the men in a country were on an average 6 ft. high, and there were some families which had long and closely interbred, these would be almost dwarfs, their average height during ten generations being only 4 ft. 8¼ in. It is, however, difficult to see how these East Lothian Stocks are not constantly self-fertilised, unless colour is of more specific importance than is generally supposed. Instead of farmers changing their whole seed, it has occurred to me, looking at these experiments, that it would be better, as well as more profitable, to get a small quantity only, and use it at the time of sowing with the old seed. In this way they would, in the second year, have all the advantages which a change of seed can effect by the small quantity brought from some situation where it was grown under slightly different conditions becoming effective in cross-fertilising the old variety. New and improved varieties would undoubtedly be raised; and, by careful selection, kinds better suited to the particular locality would be obtained than by changing the whole stock. Time will not permit me to enter into the great advantage to be derived from hybridisation when performed with the view of improving the breed. From the crosses effected in Passifloras we find that tender kinds can be cross-fertilised with comparatively hardy ones; the brilliant colours of the Himalayan Rhododendrons are retained in their hybrid offspring. Even odours are capable of being transmitted, as in the case of a hybrid named Mimulus Harrisoni obtained between the common Musk and a border Mimulus. A wide field is therefore open to all who have time and opportunity, and the subject is so interesting that one never tires, although often baffled and disappointed.

ORCHIDS.

SEASONABLE NOTES.

Those who are desirous of having good cut flowers during the dull months should pay special attention to obtaining winter flowering kinds of Orchids, and foremost amongst them may be named Ansella africana, a robust growing plant which produces from the apex of each growth a long, somewhat lax-flowered, drooping raceme, the blossoms on which are yellow, spotted and barred with cinnamon-brown. They are thick and waxy in texture, and therefore they last long in beauty. In the variety called lutea, the colour is plain yellow, and consequently not so attractive as that of the type. Being African plants, growing in low situations, they require the warmth of the East Indian House.

Angræcums.—These belong to an African genus which contains an immense number of species, but the majority of them produce very diminutive flowers. A few fine species having large, singular-looking handsome flowers, are however, included in it. Of these some are now opening their flowers, and they have broad, two-ranked (distichous) leaves, which render them beautiful ornaments to a plant house even when not in bloom. A. sesquipedale is perhaps the very largest of the genus, and although few plants of it are to be found now in full flower, some are commencing to unfold, and will continue in bloom for two or three months. Some Angræcums naturally bloom towards the end of spring and beginning of summer, and these are highly prized by exhibitors, being showy and telling plants in collections; the flowers are thick and fleshy in texture, ivory-white, with a spur often a 1½ long. A. eburneum, another species has an erect spike, bearing smaller ivory-white flowers, furnished with a shell-like labellum. This is a stronger growing plant than the preceding, and one which bears longer leaves. A. pertusum, a native of Sierra Leone is a small compact kind, somewhat rare in collections, but well deserving of more extended cultivation on account of the elegance of its long, pendulous many-flowered racemes of blossoms, which are pure white, having an appearance of shells set upon a string. A. bilobum, another winter-blooming species from Cape Coast, bears charming white flowers, each of which has a long spur; these plants should all be grown in Sphagnum; the two last named succeed well in baskets, but the others are too large for anything but pot culture. The pots should be well drained as they like a liberal supply of water, and must be carefully guarded against the attacks of red thrips, which, if allowed to establish itself, will greatly disfigure them.

Dendrobium speciosum has acquired the character of being a shy-blooming plant; and, consequently, has not found that favour with amateurs which it deserves; flowering, as it does, all through the winter, and requiring but little attention, it gives a large return for a small outlay. Its stout pseudo-bulbs bear two or three thick, dark green, leathery leaves, and from buds near their apex the raceme of flowers is produced, in length from 12 in. to 18 in., and densely crowded, the blossoms being yellowish-white and slightly fragrant. It begins to grow soon after the blooms are over, when it should have a little heat and plenty of water; and, in order to insure a rich harvest of bloom the following season, let it be placed in the open air all the summer, and supply it very sparingly with water; indeed, unless the pseudo-bulbs show signs of shrivelling, the less water it has the better. D. Hilli, a species of more recent introduction, somewhat resembles D. speciosum, and requires the same treatment. It may, however, be readily distinguished by its much longer and less robust pseudo-bulbs; the raceme of flowers is also much longer and pendulous, whilst the blossoms themselves, though very numerous, are set farther apart. Taking it all in all, D. Hilli is a very desirable plant.

Stanhopeas find little favour with the majority of Orchid-growers, their flowers being very fugacious. They are, however, valuable on account of the delightful aromatic fragrance which they diffuse through an Orchid-house, independent of the grotesqueness of their blooms. The flower-spike grows downwards, and therefore basket-culture is the proper system to adopt with such plants, a few of which should always be grown in a collection, and the less they are disturbed, the more abundantly will their flowers be produced. A somewhat dark, cool place suits them best, and, when growing, they enjoy a liberal supply of water; very little will, however, suffice afterwards.

Oncidium Barkeri, better known perhaps by the name of O. tigrinum, is a beautiful species, its large, rich yellow, fragrant flowers being most welcome at this season of the year; it is, moreover, a cool house species, and consequently doubly valuable. O. Papilio is best known as a summer-blooming plant, but those who possess well-established specimens may always have a supply of its singularly beautiful blossoms. The long flower-stem should never be cut away until it is quite dead, as it develops fresh buds from the apex for a very long time. Just now many plants of it are extremely gay. It thrives best upon a block of wood. Some few years ago, it was announced that a white-flowered variety of this species had been introduced; unfortunately, however, it has not yet made its appearance, but still remains a desideratum.

Maxillarias, although at one time largely cultivated, are now little better than outcasts; nevertheless, amongst them there are still several very fine kinds that would undoubtedly receive more attention did they not belong to this family. Amongst those now in bloom, M. grandiflora should not be overlooked; it is easily managed, and is dwarf and compact in habit; its thick waxy, flowers are large, pure white, and last long in beauty. Amongst older kinds, M. picta deserves notice; it has small, yellowish-white flowers, variously streaked and freckled with brown, and produced in great profusion. They have been found very serviceable in a cut state for mixing with other flowers in vases, for, though not very beautiful, they diffuse a grateful spicy odour throughout the apartment in which they are placed.

The genus Lycaste furnishes many fine species, which at this season (and, indeed, all through the winter and spring), supply us with large and beautifully-coloured flowers. All of them thrive best under cool treatment; indeed, some of them may be grown all the year round in a dwelling-house; but where this expedient is not resorted to, they may nevertheless be used as indoor ornaments for a long time without diminishing the beauty of their flowers, or injuring their constitutions. Foremost on the list is L. Skinneri, a kind which has bold, well-expanded, thick, waxy flowers that vary in colour from pure white, through all the gradations of white and rose, pure rose, white and crimson, to crimson-purple, all being equally lovely. L. Harrisoniæ, with its large white and rosy-purple flowers, is also a grand species; but, unfortunately, it was introduced many years ago, and therefore lacks novelty, which is too often substituted for sterling worth. L. Deppei—another old species, producing flowers variously marked with white, orange, and brown—is very attractive, and is now being sought after; but, owing to neglect, has become rare.

Odontoglossum Roezli is at once a novelty and a very fine winter-flowering plant, its large flowers being both attractive on the plant and in a cut state. Of this plant there are numerous varieties; it thrives best with a little more warmth than is required for the majority of the family.

Dendrochilum glumaceum cannot be said to have large or gaily-coloured flowers; but its pendulous white or pale straw coloured racemes present a very graceful appearance, hanging, as they do, outside of the dark green leaves, and they yield, in addition, a grateful perfume, somewhat resembling that of Almonds, altogether rendering it a very desirable plant.

In Leptotes bicolor we have a beautiful Orchid for a Wardian case; its dark green terete leaves contrast beautifully with the pure white of its sepals and petals and the violet-purple of the lip.

During the dull wet weather which we are now experiencing, Orchid-growers should guard against a superabundance of moisture in the atmosphere; such a condition is not only liable to start the plants into growth prematurely, but to cause the flowers to become spotted, and to fade much sooner than they otherwise would do.

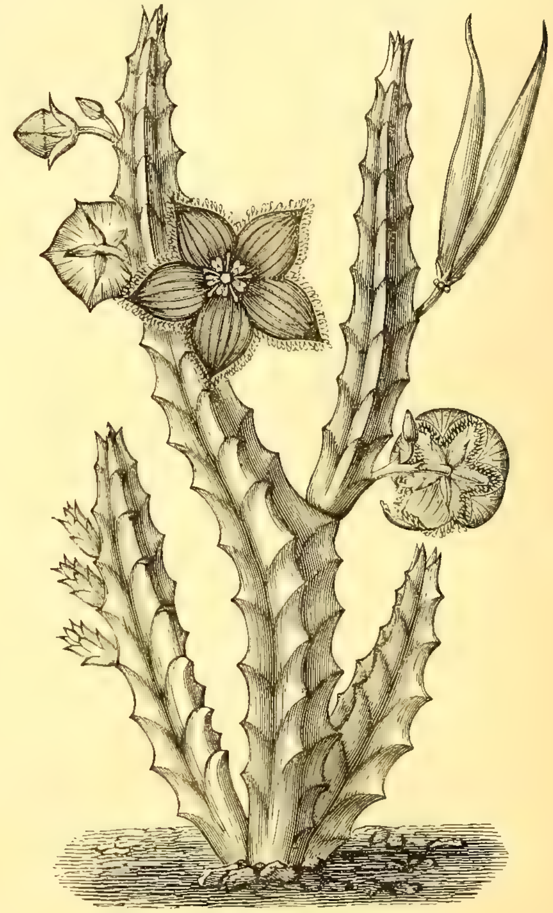
W. H. G.

Odontoglossum Andersonianum.—A plant of this beautiful Orchid, growing in Mr. Williams' nursery, is now bearing twenty-one flowers on one spike; it is one of the best varieties which we have seen of this comparatively rare Odontoglossum.

A FEW STAPELIAS.

Stapelias are succulent, leafless plants, the branches of which are generally four-sided, toothed, and covered over with dark tubercles, which give the plants a grotesque appearance. Their singular and often beautiful flowers, which spring from uncertain points of the stems, exhibit a variety of colours, forming exquisite marked or dotted patterns, and, notwithstanding the repulsive carrion-like odour which almost all the varieties possess, they are extensively cultivated because of their beauty.

S. glauca.—This is a form of S. mutabilis, from which it differs in being rather dwarfer and more glaucous. It is a free-growing kind, and has dark brown flowers without hairs, with the exception of a fringe on the margin of the petals; the stem is quite glabrous. The odour of the flowers, though but slight, is, nevertheless, sufficiently strong to induce flies to visit them. It is a native of the Cape of Good Hope.

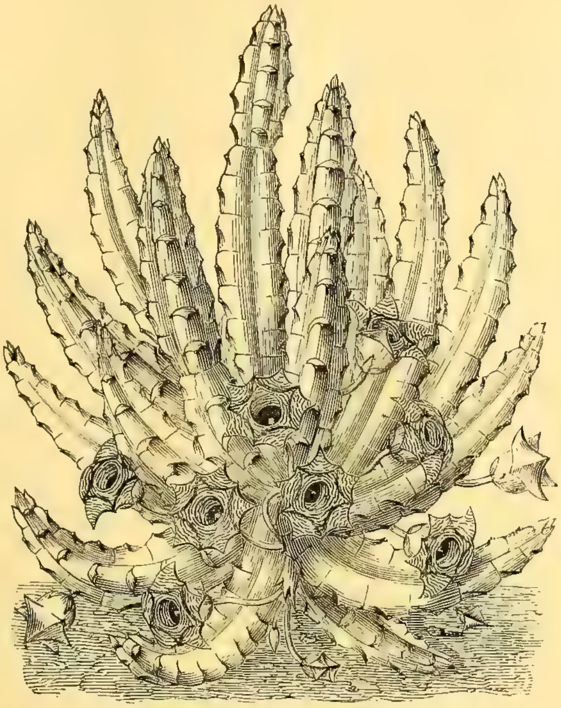


Stapelia glauca.

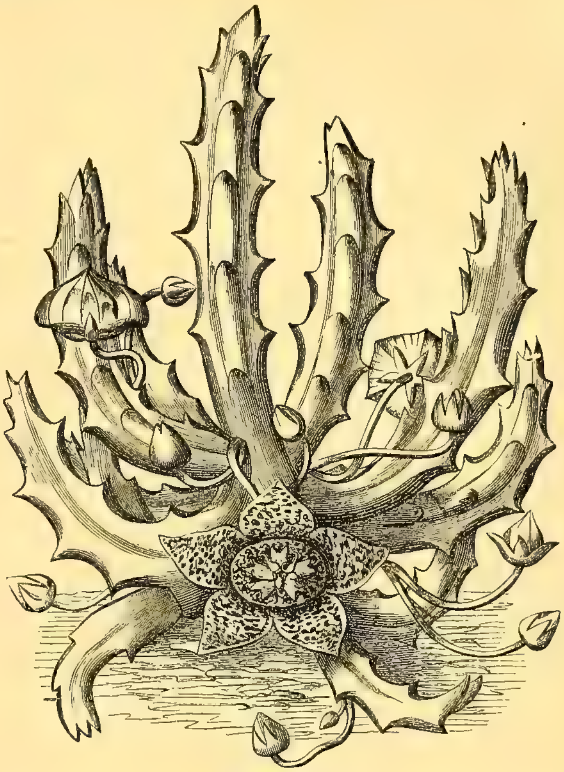
S. Thureti.—This is a very dwarf, singular little plant, which has pale brown striped flowers that are quite glabrous. Its stems have a curious habit of burrowing in the ground, and then rising again. Plants possessing this habit are called Huernias by some but I am of opinion that Stapelia is the best name for them, as the general appearance of the plants shows them to belong to one and the same section.

S. tubata.—This is quite a gem in its way; it is compact in habit, and nearly related to S. campanulata. Its flowers, which are produced freely, are densely clothed inside with glandular hairs, which give them a singular appearance. The stems are glaucous, and quite smooth. With those who are fond of plants more interesting than showy, this will prove a favourite.

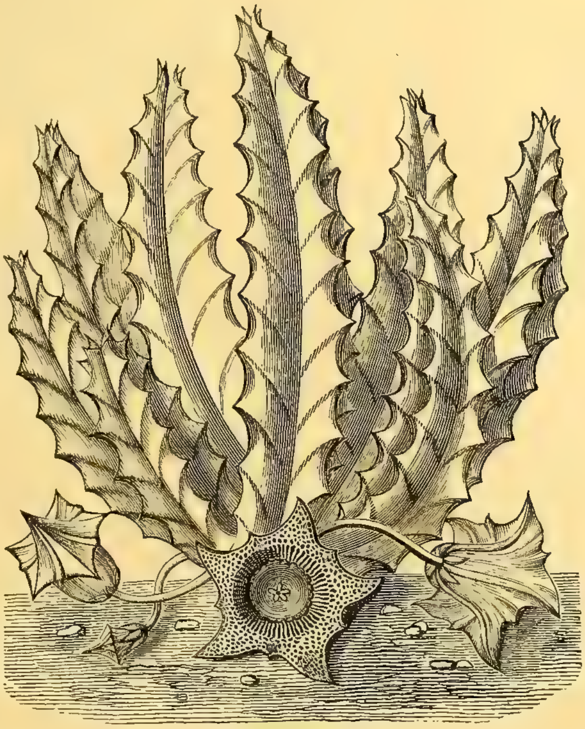
S. variegata.—This, the most common kind of Stapelia, may be easily cultivated in any greenhouse, and for beauty of colouring and finish of structure few plants surpass it, especially when seen under the microscope, and were it not for its bad smell it would, doubtless, be a general favourite.



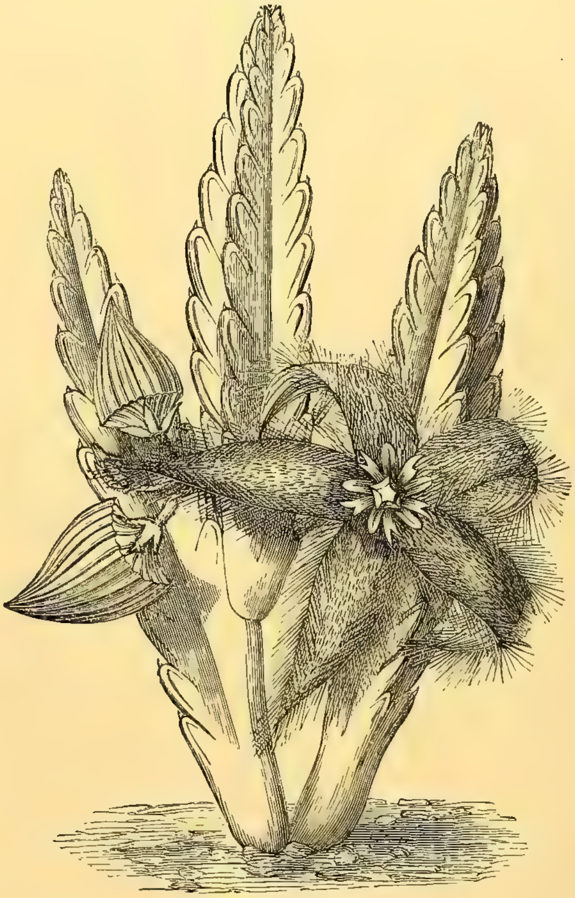
Stapelia (Huernia) Thureti.



Stapelia variegata.



Stapelia tubata.



Stapelia grandiflora.

S. grandiflora.—The "survival of the fittest" surely cannot apply to this plant, for its smell is so much like that of carrion that flies congregate on it in quantities. The hairs on the flowers, which are velvety-brown, are very soft, and the stems pubescent. It requires more heat than most species.

All Stapelias are natives of South Africa; therefore, a greenhouse temperature suits them best; but the lightest and warmest part of the house should be selected for them. They should be grown in light sandy loam; cuttings, taken off in June or July, strike freely.

Sudbury House, Hammersmith. J. Croucher.

THE GEOGRAPHICAL DISTRIBUTION OF PLANTS.

(Continued from page 504).

Vegetation of the United Kingdom Compared with that of other Insular Countries.

Insular Floras.—Comparing the flora of the British Isles with the floras of other islands or groups of islands in different latitudes, and at various distances, usually much greater from the nearest continents, we are struck with the fact that our own flora, as an insular flora, is almost alone in possessing no endemic species—a fact which seems to indicate that these islands were connected, at no very remote period in the history of the world, with the mainland of Europe. Generally speaking, the more distant an island is from the nearest mainland, the more distinct its vegetation, and the greater the number of endemic species. The vegetation of Japan, of New Zealand, of the Galapagos, of St. Helena, and of the Azores, is in each case of a more or less distinct character from that of the nearest land.

The Flora of New Zealand Compared.—The flora of New Zealand, including the Kermadec, Chatham, and Auckland islets, furnishes excellent material for comparison. The area of the islands of New Zealand collectively is not much less than that of the United Kingdom, and its loftiest mountain peaks are nearly thrice the altitude of our highest. The general mean winter temperature, in 1874, of South Island (middle Island of some books) was 43°.7; the lowest mean, 37°.2, being from Queenstown; and the mean summer for the whole islands, deduced from observations taken at seven stations in different parts, was 60°.3. Thus the winter temperature is about the same as that of the warmest parts of England and Ireland, with a somewhat lower summer temperature. The general mean summer temperature of the North Island for the same year was 65°.1; and, for the winter, 50°.6. The extremes in the amount of rainfall are nearly as great as in England.

Number and Distribution of the Species.—The total number of species of flowering plants and Ferns hitherto collected in New Zealand is about 1025; but it is probable that future explorations may add another hundred or two. They represent 89 Natural Orders and about 340 genera. None of the Natural Orders are peculiar to New Zealand, but about 27 of them are not represented in Britain, and these, for the greater part, occur in the warmer regions of New Zealand only. Upwards of 30 of the genera and 700 of the species are peculiar to the country, in striking contrast to the absolute absence of endemic types from our flora. Of the remaining genera, 115 extend to Europe, about 265 to Australia, and 175 to America; and about 230 species are Australian, and half that number South American.

British Plants Indigenous in New Zealand.—The British species found in New Zealand, and believed to be indigenous, are—Nasturtium palustre, Barbarea vulgaris, Cardamine hirsuta, Spergularia rubra, Montia fontana, Geranium dissectum, G. molle (?), Potentilla anserina, Geum urbanum, Callitriche verna, Taraxacum Dens-leonis, Picris hieracioides, Sonchus oleraceus, Convolvulus Sepium, C. Soldanella, Solanum nigrum, Veronica Anagallis, Chenopodium glaucum, C. urbicum (?), Suæda maritima, Atriplex patula, Polygonum minus, P. aviculare, Typha angustifolia, Sparganium simplex, Lemna minor, L. gibba, Potamogeton natans, P. heterophyllus (?), P. gramineum, P. pectinatus, Ruppia maritima, Zannichellia palustris, Juncus communis, J. maritimus, J. bufonius, Luzula campestris, Scirpus maritimus, S. lacustris, S. triqueter, Carex stellulata, C. teretiuscula, Alopecurus geniculatus, Agrostis canina, Deschampsia cæspitosa, Kœleria cristata, Festuca duriuscala, Hymenophyllum tunbridgense, Cystopteris fragilis, Pteris aquilina, Aspidium aculeatum, Gymnogramme leptophylla, Ophioglossum vulgatum, Lycopodium Selago—in all 54 species. It is possible, and even probable, that some of the foregoing plants were orignally introduced by man; but there can be no doubt that most of them, which are cosmopolitan species, are really indigenous. In addition to this already considerable list, some 200 or more British species have been intentionally or unintentionally introduced, and are now more or less naturalized in different parts of the islands. This circumstance will receive further consideration under the head of the "influence of man on the present distribution of plants."

Natural Orders Characteristic of the British Flora in New Zealand.—Taking the same Natural Orders enumerated above as characterising the British flora, the number of genera and species in New Zealand belonging to the same Orders are: —Compositæ, genera 24, species 143, including many singular densely-tufted species, and 40 shrubby ones; Gramineæ, genera 26, species 61; Cyperaceæ, genera 14, species 69; Cruciferæ, genera 7, species 13; Leguminosæ, genera 5, species 13; Umbelliferæ, genera 10, species 45; Scrophularineæ, genera 10, species 62; Labiatæ, genera 2, species 2; Caryophylleæ, genera 4, species 12; Orchideæ, genera 17, species 38; Ranunculaceæ, genera 4, species, 27; and Filices (Ferns), genera 31, species 123. These twelve Orders contain 154 out of 340 genera, and 608, or considerably more than half of the total number of species. The remarkable features here are the paucity of Leguminosæ (including only the genera Edwardsia, Clianthus, Swainsona, and two curious genera of almost leafless shrubs), Labiatæ (one Mint and one Scutellaria), and Cruciferæ; and the large proportion of Ferns, Compositæ, Umbelliferæ, and Scrophularineæ, which, collectively, make up considerably more than a third of the whole flora.

Proportions of Woody Plants.—Counting 9 species of Tree-Fern, 1 Palm, and 4 Cordylines, the total number of woody species, shrubs and trees, amounts to 322; another feature in which the flora differs from our own. Myrtaceæ, Compositæ, Laurineæ, Coniferæ, Araliaceæ, Scrophularineæ, and Ericaceæ, contribute largely to the woody element. To go more into detail here would be wearying to the reader, and it is quite unnecessary, because many of the ornamental species are enumerated under the heads of geographical distribution of the hardy and cool conservatory exotic plants cultivated in this country. There is, however, one or two more features of the New Zealand flora worthy of comment.

Genera Represented by Many Species.—One is the relative proportion of large genera. Thus, there are 20 species of Ranunculus, 12 of Pittosporum, Metrosideros 10, Epilobium 17, Hydrocotyle 10, Ligusticum 12, Panax 10, Coprosma 24, Olearia (shrubby composites) 20, Celmisia 24, Cotula 13, Raoulia (singular-tufted composites) 12, Gnaphalium 15, Senecio 20, Dracophyllum 11, Veronica 40 (32 of which are shrubby), Pimelea 10, Juncus 12, Uncinia 10, Carex 23, Agrostis 10, Hymenophyllum 15, Lomaria 14, Asplenium 12, and Polypodium 10. These 24 genera average 16 species each, and, collectively, constitute 386 species in a total of 1025.

Monotypic Genera.—In opposition to this, the number of genera represented by single species is very large, no fewer than 170 being restricted in these islands to one species each.

Orders Reprsented by only one Species.—Another peculiarity of the flora is the number of outliers of tropical orders and genera; and the following orders are represented by only one species each: Magnoliaceæ, Elatineæ, Lineæ, Meliaceæ, Olacineæ, Stackhousieæ, Anacardiaceæ, Passifloræ, Cucurbitaceæ, Primulaceæ, Sapoteæ, Gesneriaceæ, Nyctagineæ, Amarantaceæ, Paronychieæ, Chloranthaceæ, Balanophoreæ, Hypoxideæ, Pandaneæ, and Palmeæ, and many others are represented by two or three species only. Finally, there are eight indigenous Loranthaceæ, shrubby parasites, belonging to three distinct genera; and there are six species of Drosera, some of them very handsome.

General Remarks on other Insular Floras.—Having described so fully the vegetation of New Zealand, a few general remarks respecting other insular floras must bring this part to a close.

Flora of Japan.—The Japanese Islands, somewhat similarly situated as the British Islands, with regard to proximity to mainland, and enjoying in the northen and central part a climate similar to the English climate, presents a flora having many features in common with our own, associated with a much greater variety of trees and shrubs, both evergreen and deciduous. The richness of this flora, particulary in shrubs with showy flowers, may be gathered from the enumeration in a succeeding paragraph. With many peculiar species, it has a large proportion of species common to the mainland of China, and, as the country stretches through some 20° of latitude (from about 30° to 50° N. lat.), and some of its mountains rise to an altitude exceeding 12,000, it includes types characteristic of cold, temperate, and sub-tropical regions.

Flora of St. Helena.—One of the most remarkable insular floras in the world is that of St. Helena. This speck of dry land in the midst of the vast Altantic Ocean is only about a third the size of the Isle of Wight, and it is 1200 miles distant from the coast of Africa, and 2000 from America. Unfortunately, much of the aboriginal flora was destroyed before this interesting spot was thoroughy botanized. When the country was discovered, many of the valleys were covered with forests, but these have now quite disappeared, and the original vegetation is being supplanted by introduced species from various countries. Excluding Mosses, Lichens, &c., the indigenous flora consisted, so far as botanists have been able to determine, of less than seventy species, whereof more than fifty have never been found elsewhere. It is possible, however, that some of the endemic species were extirpated before any botanist thoroughly explored the island. One or two, or perhaps more of the species no longer exist in a living state in the island itself, though they are in cultivation in this country. Pelargonium cotyledonis, a species with peltate leaves, appears to be in this critical situation. The affinites of this singular flora are decidedly South African, though the species and some of the genera are quite distinct.

Flora of the Islets of the South Indian Ocean.—The voyage of H.M.S. "Challenger" was the means of contributing some interesting particulars of the vegetation of the islets of the Indian and South Atlantic oceans. Kerguelen's Land, Marion Island, Yong Island, and several others were visited, and the fact established that the vegetation of these islands, although they are very remote from each other, is essentially the same. Marion Island is about 2000 miles from Kerguelen's Land, with only the Crozet group intervening. That most interesting plant, Pringlea antiscorbutica (Kerguelen's Land Cabbage), described by Sir Joseph Hooker on his return from the Antarctic Expedition, and which proved so serviceable to the crews of the ships forming the expedition, was discovered by the naturalist to the "Challenger" in Marion Island; and it has also been collected in the Crozet Islands. Several other plants were found to be common to the three groups.

Identical Species Occurring in very Distant Islands.—Amongst several European species, probably introduced by the sealers, who sometimes visit these remote islands, were Montia fontana, Limosella aquatica, and Hymenophyllum tunbridgense, which cannot be regarded as introduced plants. One more instance of the same species being found in distant islands. The genus Phylica is a large one, whose species, with few exceptions, are South African. One of these exceptions is P. arborea, a native of Tristan d'Acunha, where it forms an important part of the woody vegetation; and until a few years ago it was supposed to be confined to this island. But three or four years ago the lamented and unfortunate Captain Goodenough landed on Amsterdam Island, which is about 5000 miles distant from Tristan d'Acunha, and brought away a specimen of the only kind of tree seen. This proved to be no other than Phylica arborea.

Gala Pagos Islands.—The still imperfectly explored Galapagos Islands, immediately on the Equator, and about 600 miles from the western coast of South America, have a flora very distinct as to species from that of the mainland.

Polynesia.—In many of the islands of Polynesia it is difficult to distinguish between indigenous and introduced plants, and none of them exhibit a peculiar flora. The Bread-fruit tree and Cocoa-nut Palm are almost universally dispersed, and exist both in a wild and cultivated state.

Azores.—Coming nearer home, to the Azores, which are about 800 miles distant from the opposite coast of Portugal, we find a flora essentially that of the Mediterranean region, arguing a not very remote separation. The total number of species is 480, whereof 40 are endemic, 400 extend to Europe, and 320 to North Africa.

Comparison with Continental Floras.—We have given instances of insular floras of the most diverse composition. The vegetation of large Continental tracts presents similar peculiarities in different parts. Thus, in the northern hemisphere, more particularly in the Old World, speaking generally, plants have a wide area of distribution, whereas in South Africa and in Australia the species are numerous, and many of them very local.

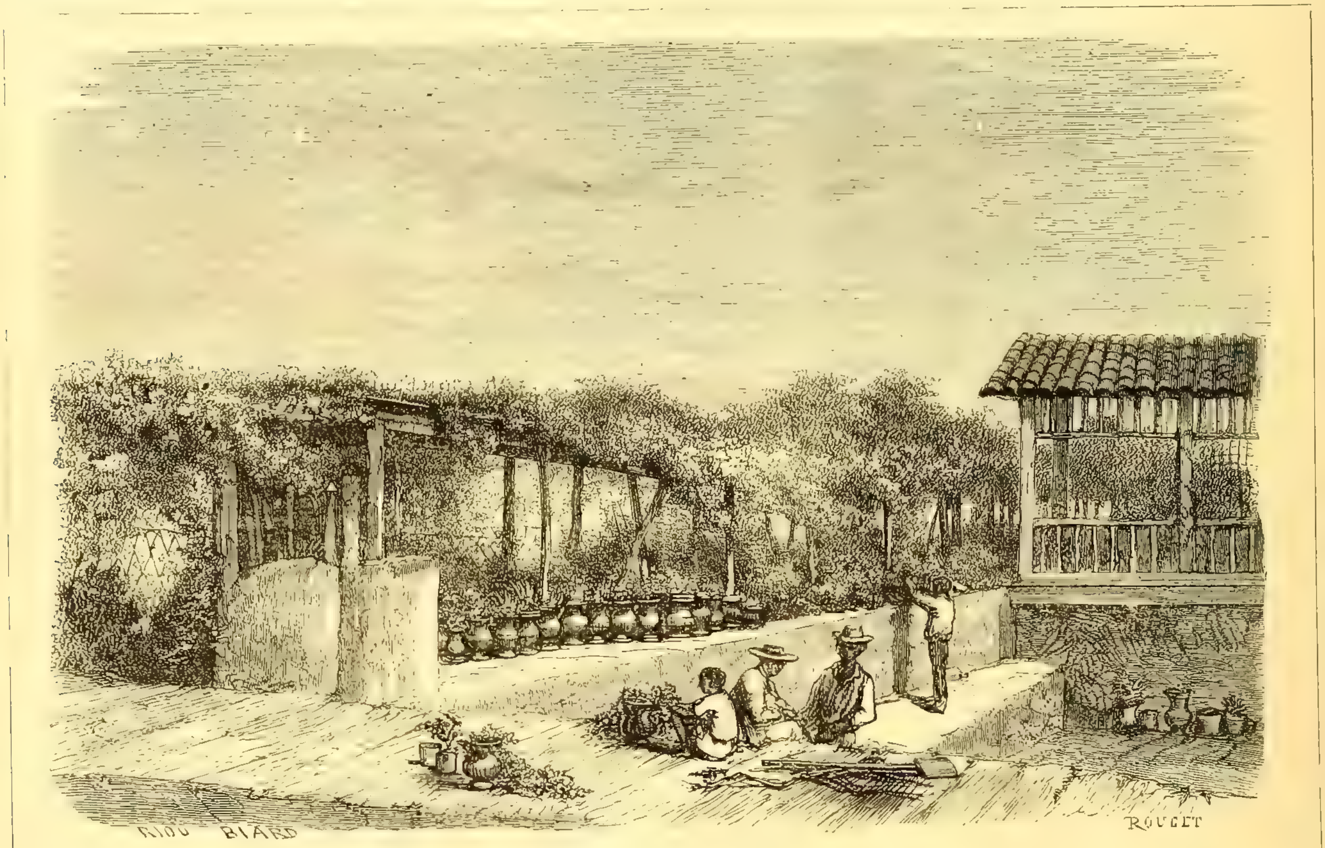
Distribution of Exotic Plants Hardy in the United Kingdom.

Definition of the Term "Hardy."—The term hardy is here employed in its widest sense, and includes, at least, three different categories of plants, namely—(1) Such as are quite at home in the climate, summer and winter, flowering and bearing mature fruit in ordinary seasons; (2) such as grow and flourish and receive no injury, or little injury, from the cold of our ordinary winters, but either do not flower, or, if they flower, do not produce perfect seed; and (3) such whose period of life or growth lasts only for a few months, but whose seeds or root-stocks retain their vitality in the open ground. Of course no hard and fast line can be drawn, nor is it necessary in the definition of the term hardy, because a plant that is hardy in one part of the kingdom may require shelter in another part of the kingdom; but no plant can be considered as hardy which, from some climatal cause or other, must be sheltered, or renewed, or replaced every season.

Arctic and Alpine Plants.—Taking this definition, we should exclude such Arctic or Alpine plants as are unable to withstand the heat of our summers and the wet of our winters, under the most favourable conditions we can provide for them. Practically, the number would be small, though governed by the skill of the cultivator in choosing situations in accordance with the natural requirements of his plants.

Mean Annual Temperature of Countries whence we Obtain Hardy Plants.—Therefore, we include under this head the vegetation of the Arctic and Alpine regions, were the mean annual temperature ranges between 30° and 40°, and where the winter temperature is exceedingly low—though vegetation is rarely exposed to its full influence, on account of its usually being covered with a more or less thick layer of snow—and also that of all countries and regions enjoying a mean annual temperature of 40° to 60°. The last temperature, or upper limit given, may appear rather too high; and so it is in some respects. The plants from the warmer regions within our limits are hardy only in the southern and western parts of the kingdom, and belong, many of them, to the second and third categories enumerated above. But, just as in different parts of this kingdom, the mean annual temperature is the result of a very equable climate, or a higher summer or lower winter temperature, so the climate of other countries enjoying the same mean annual temperature exhibits similar and much greater variations. In round numbers, we may put the mean annual temperature of the southern half of the kingdom at 50°, made up by an average of 40° for the six colder months, and an average of 60° for the six warmer months.

Course of an Isotherm, Denoting a Mean Annual Temperature of 50° in the Northern Hemisphere.—Now if we take a map showing the isotherms, drawn up from observations made in various countries, and trace the mean annual of 50° around the world in the northern hemisphere, we shall find that its course is by no means determined by latitude. Starting from the west coast of Ireland, in about 54° N. lat., in a westerly direction, the isotherm of a mean annual temperature of 50° bends gradually southward as it approaches the eastern coast of America, past Newfoundland and Nova Scotia, and enters the American Continent in about 44° N. lat. It still tends a little more to the south, sufficient to clear the lakes, and then bears northward, as it approaches the western side, and traverses Vancouver's Island. In the Pacific Ocean it reaches, in about 160° west longitude, the same latitude it has in Ireland, and then curves southward nearly to the fortieth parallel before entering Japan. From thence it bears a little northward until it reaches Central Asia, and then a little southward, skirting the north shore of the Caspian and Black Seas. After leaving the Black Sea, the course is through Holland to England and Ireland. The description of the course of this one annual isothermal in the northern hemisphere will give some idea of the general distribution of heat in this part of the world, except that successive lines of smaller amounts of annual temperature show increasingly larger curves to the north in the oceans, and successive lines of higher annual temperature gradually smaller curves.



A Garden in a sun-burnt land.

Course of an Isotherm of 40° for the Month of January in the Norehern Hemisphere.—Before concluding this part of the subject, it will be instructive to show the course a line of an equal temperature of 40° for the month of January and one of 60° for the month of July. The mean of 40° for January, after passing through the south-west of England and west of Ireland, runs northward in the Atlantic beyond the sixtieth parallel, a little to the west of Iceland, and then gradually curves southward until, in the centre of North America, it is below the fortieth parallel; in fact, near the thirty-fifth. As it approaches the western coast it runs farther north, and in the Pacific Ocean still further, but never beyond 50°. Descending again, it enters Asia about 40°, and in the centre of this continent it is as low as 35°, passing south of the Caspian and Black Seas through Asia Minor, and the south and west of Europe, it enters England.

Course of Isotherm of 60° for July in the Northern Hemisphere.—Now note the difference in the direction of a line of equal heat of 60° for the month of July; the curves are nearly all through their course southward where they were northward, and the reverse, for the equal January temperature. Thus, the isothermal line of 60° runs from the north-east of Scotland through the south-west of Ireland, and a little southwards across the Atlantic, entering America below the fiftieth, and running northward to beyond the sixtieth parallel of latitude, at some distance from the north-west coast. As it approaches the coast it takes a southerly direction, issuing from the continent in about 54° lat., and reaching about 40° in mid Pacific, then, turning northwards, and entering Asia in about the same latitude it leaves America, it gets up to 65° in Asia and Europe, and runs down the coast of Norway to Scotland. Anybody taking the trouble to trace on a map the lines of equal heat which we have roughly indicated, will see that the same modifying influence—water—which we know affects the climate of this country so much, is equally active in other parts of the world.

Continental Climates.—In the centres of large continents, the extremes of heat and cold for latitude are much greater than in islands and in countries bordering the sea; and the Atlantic makes its influence felt much further to the north on its western side than on its eastern, and much further north than the Pacific. These differences are attributed to the direction taken by streams from the equatorial regions. As an instance of an extreme climate in the latitude of London, a few figures relating to Nertchinsk, in eastern Asiatic Russia, will give some idea. It should be mentioned, however, that this place is situated about 2250 ft. above the level of the sea.

The mean temperature of the winters of two years, deduced from hourly observations, was 47° of frost, or 15° below zero, and the mean for December was 19°.6 below zero; on the other hand, the mean for July was 64°.2, for June 58°.5, and for August, 60°.9, or a sufficient amount of heat for ripening any of the cereals cultivated in this country, and for raising many other summer crops.

Course of Isotherms in the Southern Hemisphere.—Turning from the northern hemisphere to the southern, a glance at a map of the world is sufficient to enable one to appreciate the vast difference in the proportions of land and water and the little land there is in high southern latitudes. The isotherm of a mean annual temperature of 50°—almost the coldest passing through land, with the exception of the extreme south, where no vegetation has been seen—touches the southern extremity of New Zealand, and includes a considerable portion of Patagonia, besides a few small islets. Here temperature for latitude, at sea-level, is nearly uniform.

Concerning Countries having a Mean Annual Temperature higher than 50°, but the Plants of which are Hardy.—So far, we have limited ourselves to pointing out the course of the isotherms of a mean annual temperature of 50°, because that will give a general idea of the extent of country whose vegetation is perfectly hardy in this country. But, owing to the mildness of our winters, plants from countries enjoying a higher mean temperature, even up to 60°, will succeed in the south-west, though, as has already been mentioned, some of these do not get sufficient heat to produce flowers, or flowering, fail to ripen their seed. This applies more especially to those countries in which the mean temperature is considerably higher than 50° on account of the high summer temperature. The variety of ornamental plants from which we can choose is thus considerably increased; but the number of useful plants, especially those whose uses depend upon their perfect development, is not materially increased. It extends the area of country in the northern hemisphere, in the parts less open to the influence of the oceans, down to 35° N. lat., and in some places even a little further south. In the southern hemisphere it adds very little, because the mean there is made up of a very narrow range of temperature. W. B. Hemsley.

GARDENS IN SUN-BURNT LANDS.

We, who have to endure excessive wet and so often long to see more of the sun, are perhaps much more happily situated than people in some brighter countries. The heat and drought are often so excessive that it is with the greatest difficulty that any plants at all can be grown. In Brazil, for example, the gardens in many places are formed of little covered walks with climbers which will stand the sun, and in the shade of which they try to grow a few plants in pots, which would have no chance of thriving in the open sun. Edgings are formed of shells or stones, which cause the gardens to have an arid appearance. In the large vase-like pots a few favourite plants may be grown. Even without going so far, the gardens in Southern Europe are often fearfully scorched in summer time, and the only plants to be seen are a few in vases on a walk, as in this case. We are inclined to think, however, that, owing to the wonderful variety of vegetation which exists, there are few places for which some plants would not be found to thrive. To ascertain this, however, many plants have to be tried and many experiments made.

THE ADULTERATION OF SEEDS ACT.

Thomas Strangeways, a wholesale seedsmen, carrying on business in the Mile End Road, appeared before the Lord Mayor, at the Mansion House, the other day, to answer two summonses issued against him for having sold a quantity of killed seeds for the purpose of adulterating genuine seeds. It was explained that the offence imputed to the defendant was that he had sold twenty-eight bushels of Charlock seed, for the purpose of mixing with Swede and other Turnip seed, and this was generally done in equal proportions, so that a purchaser who made use of the killed seeds was defrauded of one-half of the value of the seed which he bought. The defendant had boasted that the operation was so profitable that he did not care for the penalty fixed by the Act, which was £5 for the first offence, and £50 for the second.—A witness named Francis proved the negotiation for the purchase of two different parcels of the killed seeds on the 26th and 27th of October, and he also proved that the defendant assured him the seed he sold him was all dead, and that he was careful in seeing that not a single seed was left in the sack when it was emptied into the kiln to destroy its germinating power. Three pounds of Turnip seeds were usually sown to the acre. Twenty-eight bushels (the quantity of seed purchased from the prisoner) would sow 460 acres, and 24 bushels about 430 acres. If dead seed was mixed in the proportion of half and half, that quantity would sow about 1,700 acres. Mr. Charles Sharp, of Sleaford, deposed that Charlock was worth 3s. 6d. a bushel, and was crushed for oil and manure. When killed it had no proper agricultural purpose, nor was it an article of commerce. Swede Turnip seed varied in price from 75s. to 84s. a bushel. Killed seed had no value whatever. It was only sold for mixing purposes. If the seed was not killed, it would betray the fraud. The defendant urged that what he had done was not with any intention to defraud. The Lord Mayor fined the defendant £5 for the offence of killing the seed, and £5 for that of selling the killed seed, and £5 5s. costs. The money was paid.

THE KITCHEN GARDEN.

KITCHEN GARDENING MADE EASY.

For these nine years past, the greater part of our kitchen garden has not been dug more than once in two years. I find too much digging not only hurtful to many vegetables, but very expensive; I therefore try to serve our *chef* and make the garden pay its way. To illustrate the method which I adopt, I will begin with early Peas on a south border, which, contrary to many, I always sow early in November; but let me remark that by rolling the seeds in red lead, the mice do not touch them; and, when they appear above ground, a small coating of coal ashes keeps them warm, and in a great measure wards off the slugs; and, lastly, when well above ground, I stretch three lines of worsted along each row, a plan which keeps off the birds. When the Peas come off, which is generally by the 1st of July, I stir up the ground with a tool which we call a cultivator. I then set the line, making holes with a crowbar, and drop into them Brussels Sprouts, giving them a good watering when planting is completed. These stand until March; we treat them to a mulching of long manure from the stables, which keeps them moist all the autumn. The first week in April we again cultivate the land, and all the long manure being now rotten, we mix it with the soil. Again we set the line, draw drills 3 in. deep, and plant Veitch's Ashtop Potatoes. These we take all up when ready, level the land with a wooden rake, and sow Carrots in the middle of July, making the fourth crop, without the use of a spade. The Carrots are not all lifted before February, as we take them up as required. These Carrots are very different from those sown early in spring; they are young, tender, and delicious. When all are off, the border is then manured heavily and dug deeply, preparatory for another campaign. R. Gilbert.

Burghley.

DANDELION SALAD.

At a time when materials for salad-making are somewhat scarce, it may not be amiss to direct attention to the Dandelion for this purpose. It may be found in abundance in almost every part of the country, and, therefore, easily obtainable in excellent condition from November to March. It is highly esteemed by the French, and may be seen in their markets for sale; it is really delicious as a salad, and one that can be used almost daily without tiring the appetite. The French attribute to it excellent medicinal qualities, with what truth I am unable to say. I feel confident, however, that the plant is most wholesome as well as agreeable to the palate. The great drawback to its general use in this country is the want of knowing how to treat it. I may mention, however, that it is one of the simplest salads to make, as it requires nothing whatever except oil, vinegar, pepper, and salt; it would, in fact, be spoilt by any interference with it in the shape of adding other ingredients besides those just mentioned. In gathering Dandelions, an ordinary table-knife is required to cut the roots just below the crown, choosing those with narrow leaves, which will be found the most tender and best flavoured, the large-leaved kinds being somewhat coarse. In preparing them, a small portion of the root should be allowed to remain attached to each crown, for the double purpose of holding the leaves together and for flavour; they should, in fact, be trimmed similar to roots of Celery for market. Care should be taken to remove old or decaying leaves, Grass, or other matter, cutting off just the tips of the leaves if decayed. The trouble of preparing them is perhaps one of the reasons why they are not more generally eaten, as certainly some little patience is requisite to clean them, but I can guarantee that the labour will be well repaid. Nothing remains after this to fit them for the salad bowl except giving them a thorough washing, particular care being taken that no grit is left. They should also be dried in a towel, for it is impossible to make a good salad unless the materials of which it is composed are thoroughly dry; inattention to this I believe to be the cause why many persons dislike salads, as water spoils the vinegar, and prevents the oil from becoming properly incorporated with the salad. In mixing it, a wooden spoon and fork are necessary; salt and pepper, according to taste, being placed in the spoon, pour on them enough vinegar to make a thin sauce, which pour equally over the salad; then add more vinegar, and lastly the oil; mix all thoroughly, *i.e.*, turn the materials over and over until the oil and vinegar are evenly distributed; however insignificant these simple details may appear, I assure those who make salads that their goodness or badness depends in a great measure upon these directions being attended to or neglected, although the proportion of oil to vinegar may depend upon taste. I have found the following agreeable to most persons, viz., three tablespoonfuls of vinegar to two and a half of oil. I may here mention that I allude to French white wine vinegar, the English not being nearly so suitable for salad-making, and the oil should be the best obtainable, as nothing is more calculated to spoil a salad than indifferent oil. After mixing, no vinegar or oil should remain at the bottom of the bowl. I venture to think that, if the above suggestions be strictly observed, some of your readers who have never tried Dandelion salad have still a treat in store. Charles Dennis.

Southwark Park.

Early Peas Under Glass.—Unheated glass structures, no matter what form they may have, are most efficient aids in forwarding early produce; and those who have abundance of such conveniences stand in a far better position than others whose means are limited. Peas of Tom Thumb, Blue Peter, Multum in Parvo, or any other of the dwarf growing kinds, sown now in boxes or pots, and placed under glass in a light position, will yield a good and certain crop earlier than could, under the most favourable circumstances be obtained from an unprotected border. In the open border I find wire protectors to be great conservators of warmth, more so than any one would belive who had not tested them side by side with rows unprotected, and they also, during the early stages of growth, which are generally the most critical, protect them from the depredations of sparrows.—E. Hobday.

Mushrooms in a Fruit-room—My fruit-room is built on the ground floor, at the back of a late Vinery, and is paved with common bricks, but not heated. Thinking that a slightly moist atmosphere would prolong the keeping of the fruit this season, I determined to try to grow Mushrooms under the first shelf by enclosing it, and so far the result is very satisfactory, both as regards the keeping of the fruit and the growing of Mushrooms, for at present the bed is covered with Mushrooms in all stages of growth. I prepared the bed in the usual way, and spawned it on September 18 with, I must say, very doubtful spawn. About a fortnight afterwards, finding some Mushrooms on my Rhubarb bed, I removed 1 in. in depth of the soil, and discovered a large patch of good spawn, with which I spawned my bed again, and from this I obtain my Mushrooms. In growing Mushrooms it will therefore be seen, as Mr. Groom says (see p. 483), that upon the quality of the spawn success more depends than on the kind of structure in which they are grown.—James Simmons, *Calverton Hall, Notts.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Dalmeny Brussels Sprouts.—These are by far the best that I have ever grown. We have a large batch of them now ready for use; each plant is about 18 in. high, and from four to five dozen large hard sprouts are clustered round each stem. Scrymger's Giant, which is generally well spoken of, has failed to fold its sprouts, and I will not grow it again.—Cambrian.

The Best Winter Lettuce.—We grow a good many varieties of Lettuces for winter use, including the hardy green Hammersmith, All the Year Round, Tom Thumb, &c., but the best of all is Stanstead Park. We have one large plantation of this ready, and others are coming on to succeed it. Those which we are cutting average 20 in. in circumference. They are hard and crisp, and self-folded into a ball, with the exception of three or four leaves on each plant. —Cambrian.

Mr. W. Bull is forming a supplemental nursery near the King's Road, in which eighteen large hothouses are now being built for the accommodation of new plants.

SOCIETIES AND EXHIBITIONS.

MESSRS. SUTTONS' READING ROOT SHOW.

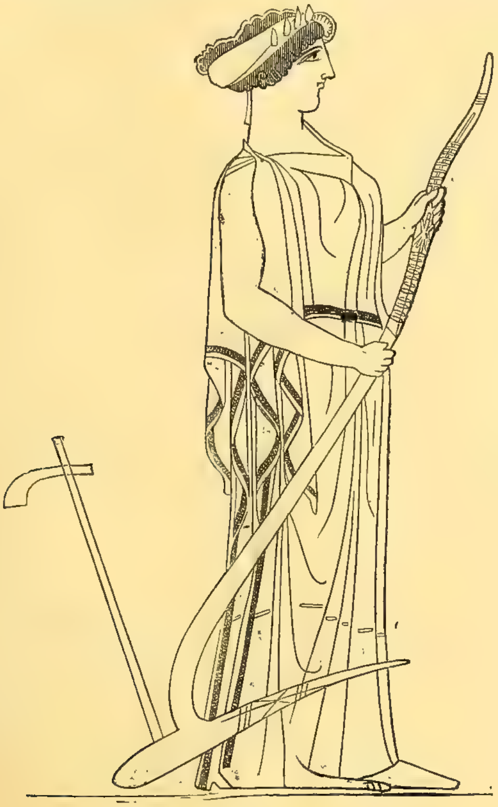
At this show collections of vegetables were limited to twelve kinds, and, as there were sixteen competitors, the display was a remarkably good one. Mr. W. Wildsmith, gardener to Viscount Eversley, at Heckfield Place, was placed first; his collection contained Brussels Sprouts, Dwarf Curled Savoys, true Rosette Coleworts, handsome Masters' Prolific Cucumbers, Suttons' selected Parsnips, Pink Celery, handsome Reading Onions, Dark Red Beet, Excelsior Round Potatoes, Autumn Giant Cauliflowers, Intermediate Scarlet Carrots, and Red Stone Turnips, all very effectively arranged on a ground of leaves of the Curled Kale, making a group as to the merits of which there could be no doubt. The second prize was taken by Mr. Higgs, gardener to Mrs. Crawshay, of Caversham Park, Reading, whose collection included both Asparagus and French Beans, but the Savoys, Brussels Sprouts, Celery, Victoria Potatoes, and Cabbages were, perhaps, rather too large and deficient in quality. The third prize was taken by Mr. Neal, gardener to P. Southby, Esq., of Bampton, in whose collection were some singularly beautiful examples of Suttons' Golden Globe Savoy, the hearts being of a rich yellow tint. The fourth prize went to Mr. Moss, gardener to C. Eyre, Esq., of Welford Park, Newbury, and several other collections were highly commended. The class for collections of Potatoes, of an indefinite number, brought a large competition, the first prize being taken by Mr. Bellis, gardener to Major Thoyts, of Sulhampstead, who had twenty-five kinds, about one-half of which were fairly good samples, but the remainder were poor; the large number of sorts shown by this exhibitor probably influenced the decision, as the second prize lot, consisting of eighteen dishes, shown by Mr. Wildsmith, was certainly the best as regards average quality and table excellence. The third prize was taken by Mr. Higgs, whose collection was rough and uneven, and far below the best exhibition standard. Mr. Tegg, gardener to John Walter, Esq., M.P., Bearwood, was placed fourth. Several commendations were given in this class. For eighteen tubers of Magnum Bonum Potato Mr. Tegg was placed first, amidst a remarkable number of competitors. The Onion class was a singularly good one, Mr. Southby being first with some very fine bulbs of great size and beauty; Mr. Penny, gardener to His Royal Highness the Prince of Wales, at Sandringham, was second; H. Verey, Esq., Trogford, third; and Mr. Wildsmith, fourth. Parsnips were shown very large, perhaps mostly too large for table use, and in great quantities. Carrots were also a great feature, and excited considerable competition. Amongst subjects of garden interest not placed for competition was an interesting collection of Potatoes from Mr. Robert Fenn, Sulhampstead, and which included some fine samples of his new Anglo-American seedlings, produced from a cross between the American Willard and the English Bountiful. Of those exceptionally good, were Sulhampstead Seedling and Anglo-American, both very handsome, long, white kinds; and Weighwell, C. P. Pringle, and Robert Fenn, red kinds; there were also excellent samples of International Kidney, Early White Kidney, Rector of Woodstock, Early Market, and a fine pile of the new Woodstock Kidney, a fine late white kind, the stock of which has passed into the hands of the Messrs. Sutton. This firm also staged a fine collection of some fifty or more kinds, and had, likewise, large heaps of their late Kidney Magnum Bonum, a very fine main crop Potato. The show was, moreover, enriched by the presence of a very fine collection of Apples and Pears staged by Mr. Fowle, gardener to Sir Henry Mildmay, Dogmersfield Park, Odiham: amongst them were Alfriston, Blenheim Orange, Cox's Pomona, Wellington, Mere de Menage, &c., in kitchen kinds; and rich-coloured samples of Ribston Cox's Orange Pippin, Court of Wick, the Wax Apple, Scarlet Nonpareil, and others amongst the dessert sorts. There were some good dishes of Pears. Mr. Davidson, gardener to Mrs. Marson, Highfield House, Heckfield, sent a quantity of bunches of a new Grape Tomato, the produce of a cross between the Red Currant Tomato and Hathaway's Excelsior, giving bunches 6 in. long, and fruit larger than Cherries. It is a very robust grower, and is yet in full fruit on a wall, merely sheltered by mats at night.

The Common Brake.—"R. C." (see p. 486) need not apprehend that the common Brake will perish, if cut over at the fall of the leaf two or three years in succession, nor for twenty years. Near to where I write is a rabbit-warren of several hundred acres, covered to a great extent by Bracken. The more accessible parts of it have, to my personal knowledge, been cut down annually for ten or twelve years, and I believe previous to that for time out of memery. The parts so cut yield just as strong a growth as those not cut. The farmers in the neighbourhood use it extensively for litter and bedding for cattle in the winter months, for which purpose it is an excellent substitute for straw. It is cut earsy in October, when partly green, or not so far dried as to become brittle. I use it to protect Celery and other garden crops in hard frost; it is not so unsightly in a garden, nor so liable to be carried about by the wind as straw.—J. E., *Llangefni.*

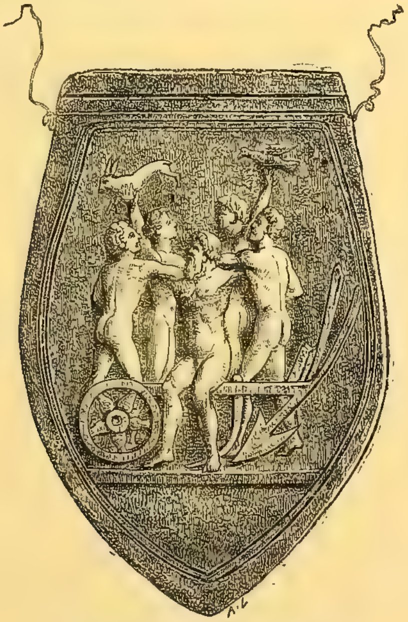
Artificial Clouds.—If you could give full details as to how the French produce artificial clouds, it would, perhaps, be of great use to me as a means of producing valuable fruit, and to other subscribers of The Garden.—John Martin. [Probably Mr. Martin alludes to the practice of burning pitch or tar in Vineyards.]

GREEK AND ROMAN PLOUGHS.

The history of ploughing and ploughs, from the primitive instruments mentioned in the Old Testament down to the most recent inventions and improvements which have taken place since the application of steam to so many practical purposes, would furnish material for a very comprehensive sketch. The ancient Egyptian implement, which was formed entirely of wood, can hardly be considered more than a modification of the hoe, and in some cases, indeed, consisted of scarcely more than a pointed stick, which was forced into the ground as it was drawn forward. The earliest kind of Greek plough, which was known as the antoguon, consisted simply of the trunk of a small tree, having two opposite branches; of these branches one formed the share and the other the handle, while the pole or beam was furnished by the trunk. A later form of Greek plough, the pekton, was very similar to that still in use in Mysia. The Romans, as might have been expected from so practical a people, made great improvements in the plough, as may be seen from the accompanying figure, where we observe that the coulter and mould-board have been added, as well as the wheels which are attached to the beam to prevent the share from going into the earth to too great a depth. It was reserved for our own country, either at home or in the colonies, to bring the plough to the high state of efficiency to which it has now attained.



Drawing of ancient Greek Plough.



Drawing of ancient Roman Plough.

BOTANIC GARDEN, HOBART-TOWN, TASMANIA.

After a long and tedious voyage from England, the approach to Hobart-Town, situate on the river Derwent, just where it widens out into its estuary, excites the utmost admiration in the lover of Nature whose tastes lie chiefly in the direction of gardens and scenery. This is not a journal for recording Alpine ascents or mere scenery, beautiful in their way though they be, so I will only say that the coast is rocky, with bold mountains rising steeply but a short distance from the sea-shore. Vegetation on the banks of the Derwent is scanty, the low-lying ground having been cleared by fire to allow of cultivation, but the mountains which rise on both sides of that river are densely clad with virgin forest, whose sheltered recesses are rich in Tree Ferns and other vegetation that delights in the cool, damp south wind that blows in so constantly during the summer months from the cold antarctic seas. Our point of interest is the botanic garden, which is beautifully situated at some distance from Hobart-Town, and close to Government House. From thence the view looking northwards, over the clear blue lake-like waters of the Derwent, towards Mount Wellington, which rises to a height of 4200 ft. only a few miles off, is worthy of comparison with any view, however famous, on the northern shores of the Mediterranean. In this hemisphere a north aspect is the sunny and sheltered situation, so on entering the garden, Bougainvillea glabra in flower on the walls, and Norfolk Island Pines growing on the sheltered slopes, surprise a visitor who finds from records kept for some years that the summer temperature does not exceed that of the south of England; absence of any severe frost, the hot sun of lat. 44, and a dry summer climate, account for such apparent anomalies as sub-tropical plants and English temperature. Among beautiful evergreen trees, Balfouria Pittosporoides deserves particular notice, laden, as it is, with clusters of large Jasmine-shaped flowers, shading from pale lemon-yellow in the opening bud to apricot colour in the fading flowers. Its scent, recalling that of its near ally, Pittosporum Tobira, fills the air; its leaves are large, smooth, and rich green, so, altogether, it is a most desirable small tree for those who can grow such things. Where the New Zealand Metrosideros thrives, the Balfouria would, I think, succeed. On every side brilliant colours sparkle in the glowing sunshine and keen bracing air, and Cantua dependens, entirely covered with its rose-crimson, pendent flowers, causes one to stop and admire it. Here, this shrub flowers for several months in the year, and rivals the most gorgeous Azalea in the mass of its blooms. Surely this plant deserves more attention than it has hitherto received in England. Like many other gems whose culture has not been properly understood, it has been pushed first into the background, and then thrown away, to make room for novelties not nearly so beautiful. I must not forget to mention that beds of Cape Statices and divers garden hybrids, such as S. Holfordi, make, with their feathery heads of rose or lavender-blue blossom, quite a new effect, which I recommend to bedders-out. But what is that lovely hedge of blue and white? A closer inspection reveals to us that it is composed of the single Macartney Rose (R. bracteata) with its large, white, Cistus-like flowers almost hiding its glossy, dark leaves, alternating with bushes of Sollya heterophylla, whose bright blue, starry blossoms, on wire-like stems, and whose pointed, pale green foliage, make together a line of beauty indeed, although the hedge itself is but a straight one. This Rose thrives on a light, warm soil in the south of England, and a dry, sunny bank would suit it thoroughly; but I fear that Sollya heterophylla declines to thrive out-of-doors, even under such conditions. A striking feature also is the number of hybrid Passion-flowers, some of them raised by Mr. Abbott, the energetic curator, who, despite the great scarcity of labour and slender funds set aside for the maintenance of the gardens, contrives to find time for patient hybridization. New Zealand Cordylines are, of course, abundant, as are also many other trees from that island. Xanthorrhœas, or Grass trees, of divers sorts here assume a beauty unknown in their wild state, their feathery leaves and blue, glaucous bloom combining the grace of a Dasylirion with the colouring of the Aloe; their flower, however, is not remarkable for beauty, being in colour and shape almost exactly the model of a large kitchen poker! But among so much beauty and interest, it would be endless to describe all that deserves attention, so we recommend all those who can to go there and judge for themselves. E. H. W.

THE LIBRARY.

VAN HOUTTE'S FLORE DES SERRES ET JARDINS DE L'EUROPE.

The second instalment of the twenty-second volume of this beautifully and profusely-illustrated work has just reached us, and gives further evidence of the desire and intention of the new editor, Professor J. E. Planchon, of Montpellier, to keep up the work entrusted to him to the high standard of excellence to which it was brought by its founder, the late M. Louis Van Houtte, of Ghent. The triple part now before us, which completes the first half of the volume, contains beautifully-executed double-page portraits of the following plants, viz., Cypripedium Harrissianum, Alstrœmeria Pelegrina, and the pure white form of the same plant; the cone and separate seed nuts of the beautiful Norfolk Island Pine (Araucaria excelsa); the free-blooming, white-flowered Daphne Blagayana, which we do not think quite true to Nature, as, so far as we know, this variety blooms before the leaves appear, the bunches of bloom appearing with great freedom, but at the ends of bare stems, whereas, in the plate before us, the plant appears in full and simultaneous foliage and bloom. Single-page portraits are also given of Rhodanthe Manglesi maculata, an introduction of Mr. Thompson, of Ipswich, very pretty, and quite distinct from the type; Statice Bourgeani, from the Canary Islands; Salvia leucantha, from Mexico; Limatodes rosea superba, a lovely rose-coloured Orchid, from Moulmein; Linaria triornithophora, a beautiful form of this family, and a native of Portugal, also known as Linaria lusitanica; Adiantum caudatum, a distinct and beautiful Fern from the East Indies—also known under the various names of A. incisum, A. vestitum, A. hirsutum, A. flagelliferum, A. capillus gorgonis, and A. ciliatum; Linum pubescens Sibthorpianum, a beautiful pale pink-flowered hardy Flax, also known as L. piliferum, L. decoloratum, and L. hirsutum; Scyphanthus elegans, also known as Grammatocarpus volubilis, a beautiful golden-flowered trailer, from Chili, somewhat resembling Tropæolum polyphyllum in colour and habit of growth; three fine double-flowered Fuchsias named Misai, Tatlo, and Remor. Cælogyne Schilleriana, a small Orchid, from Moulmein; Crinum Brachynema, from Hindostan; Hepatica angulosa, from Transylvania; Eucomis punctata, a dull-flowered bulb, from the Cape; Orchis foliosa, from Madeira; Pentstemon centranthifolius, from South California, with scarlet flowers; Dipladenia crassinoda, from Rio Janeiro; Trillium sessile, from North America; Helipterum eximium, a curious white, woolly-leaved plant, with rose-coloured, Amarantus-like blossoms, from the Cape; and Blandfordia flammea var. princeps, perhaps the handsomest variety of this family yet introduced. W. E. G.

We have received the "Annales du Jardin Botanique de Buitenzorg," published in Batavia, by H. M. Van Dorp & Co. It contains good figures of a variety of Palms grown in the garden, and is altogether a most creditable publication for a botanic garden in such a country. A good many new plants of New Guinea are described in it, and there is an interesting account of a journey in that country by the director of the garden.

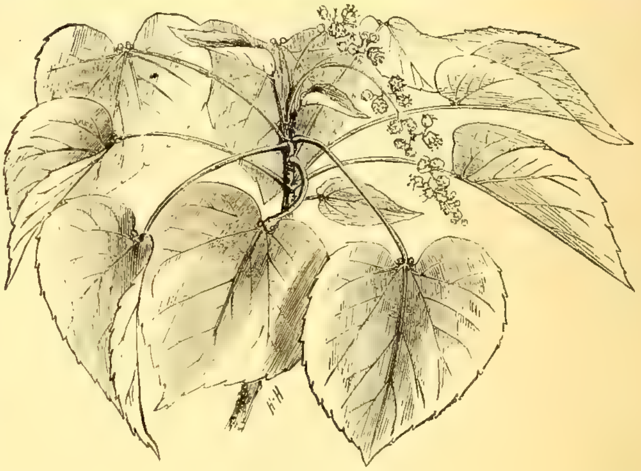
The new paper named "Brief," though unconnected with gardening, deserves a word of commendation on account of the brief way in which it deals with matters. It aims at being a reliable record of facts, dates, and opinion. No need now for those, whose outdoor claims upon their time are great, to get lost in the columns of their morning papers, to be bewildered by the verbage of one-sided city articles, and to winnowing the penny-a-liner's chaff from the grain of fact. Here are at once both sides of all questions—political, social, and economical—presented to view. "Brief," in a word, makes a necessary literary labour shorter, the time for our various other pursuits longer.

Mr. Murray has just published a second edition of Mr. Cooke's "Leaves from My Sketch Book." It forms an elegant volume, comprising sketches from Venice, Naples, Pompeii, Pristum, and many from the banks of the Nile, in which interesting land Mr. Cooke has spent a long time and made several thousand sketches.

Plant-lore of Shakespeare.—Many of our readers will be pleased to learn that the Rev. Mr. Ellacombe's papers on this subject in The Garden are being reprinted (with additions and alterations) as a book on the subject. We believe Mr. Ellacombe was the first that ever seriously took the subject in hand, and who was at the same time, fitted to deal with it from long familiarity with the flora of our open air gardens, both now and in past times.

IDESIA POLYCARPA.

The accompanying little drawing of this interesting tree was made from a specimen sent to us this season from Mr. Luscombe's richly-stored gardens at Combe Royal, near Kingsbridge. It is described at some length in The Garden for July 21 of the current year (see p. 55).



Idesia polycarpa.

Vines on Back Walls of Vineries (see p. 498).—There is nothing new in this. I began gardening more than five-and-thirty years ago, with that famous old English gardener, Mr. Elworthy, at Nettlecombe Court, in Somersetshire, and one of the things which I remember so well was my first start at thinning Grapes on a back wall of a Vinery, which was afterwards converted into a greenhouse. The Grapes on this wall ripened up to such a size in berry that I have never forgotten them; but Mr. Elworthy, if I remember rightly, adopted the method of growing a single rod to each rafter. This house was made available for a great variety of plants, including Orange trees of great age, which the late Mr. London, when there, pronounced to be the very *acme* of perfection. I have followed out this system in a Vinery at this place with wonderful success, and Mr. Wilson would no doubt improve the quality of his fruit by adopting the single rod. He would then have more light for the fruit on the rafters, as well as throw all the light on the back wall. I could name many places in this district where the back wall is made use of either for Vines, Figs, or Peaches. If the border be properly made, and the Vines carefully planted, success is certain; failure as regards inside borders generally occurs through an insufficient supply of water during the growing season.—William Culverwell, *Thorpe Perrow.*

Mr. George Maw, to whose many extensive journeys our gardens are so largely indebted for new, and particularly for hardy, flowers, has lately been robbed in one of the Ionian Islands. The authorities, however, afterwards succeeded in recovering the money, and punishing the offenders.

We learn that a seat at the Board of Directors of the West London Commercial Bank, Chelsea, rendered vacant a week or two back by the death of one of its oldest members, has been unanimously voted to Mr. Geo. Deal, an active member of the firm of Messrs. J. Weeks & Co., Horticultural Engineers, Chelsea.

No. 316.] SATURDAY, DECEMBER 8, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

Oranges and other Citronworts at Combe Royal, S. Devon.—The interesting description of trees of the Citron tribe in a recent number of THE GARDEN, reminds me of those growing here; and I venture to think you may be gratified by seeing specimens of the fruit produced at this place. My trees are growing on south and east walls, and protected only by wooden or reed frames, which are closed at night and partially by day in very severe weather. The Citrons are not good specimens, as they have often been 17 in. and 18 in. in circumference, and one or two, some years ago, measured 19 in. I could have gathered very many more, and yet not have denuded the trees of their golden glory. Oranges and Lemons have, for a long series of years, flourished at Combe Royal, and one Seville Orange tree we know must be nearly, if not quite, two centuries and a half old; it is vigorous now, as the fruit (which I have marked) will testify. From another tree more than 300 Oranges have recently been gathered.—JOHN LUSCOMBE. [This was a varied and most interesting collection. The heavily-laden branch of the Seville Orange clearly showed it to be still in vigorous health. The Sweet Lime, in the same collection, was very like Citrus japonica, of which good specimens were also sent.]

Winter Flowers.—Are amateurs generally aware how easily Roman Hyacinths may be got into bloom in the first week of November without any forcing whatever? I potted some on August 14, and took them from the ashes on September 18; they came out quite naturally in the greenhouse on November 8. Cyclamens came out late in October, and the Paper Narcissus is nearly out—all entirely without heat. It is astonishing how many amateurs one finds quite ignorant of the existence of useful flowers like Roman Hyacinths, that cheer us at this dead time of the year. Fuchsias planted out in summer, and lifted the first or second week in October, furnish a very useful lot of blooms in the greenhouse at this season, as do also Veronicas similarly treated. Roses here are still furnishing good blooms.—P. P., *Shrewsbury.*

American Apples.—Messrs. Ellwanger & Barry have sent us, from their noble and beautiful nursery at Rochester, in Western New York, specimens, large and bright in colour, of that fine Apple, the Northern Spy. This Apple Downing describes as "the most delicious, fragrant, and sprightly of all dessert Apples. It ripens in January, keeps till June, and always commands the highest market price. The tree is of rapid, upright growth, and bears moderate crops. It originated on the farm of Heman Chapin, of East Bloomfield, near Rochester, N.Y. The trees require high culture, and open heads to let in the sun, otherwise the fruit is wanting in flavour, and apt to be imperfect and knotty. Young shoots dark reddish brown. The tree blooms late, often escaping vernal frosts." The specimens sent were very high in colour, and fine in flavour. A number of them weighed nearly twelve ounces each.

The Cape Gooseberry (Physalis peruviana).—Walking down Oxford Street the other day, we noticed in a shop window some wicker-covered jars labelled "Cape Gooseberry Jam." As it is quite likely that this new preserve may become a recognised adjunct to our breakfast tables, a few words about the plant which produces it may be of interest. In spite of its name, the "Cape Gooseberry" has nothing to do with the ordinary Gooseberry of our gardens; it is a member of the Nightshade family (Solanaceæ), and a near ally of the Winter Cherry (Physalis Alkekengi). It is described as a robust, diffuse herbaceous plant, covered all over with a greyish down, with sharp-pointed ovate, entire, or wavy membraneous leaves, and small, short-stalked yellowish flowers, with a dark purple centre. The pale yellow calyx increases greatly in size after the expansion of the corolla; it is at first only a ¼ of an in. long, but attains as much as 2 in. in length, with an inflated tube; this encloses a globose, yellow edible fruit, to which the name of Cape Gooseberry is applied. Originally a native of Chili and Peru, this plant has spread throughout the warmer regions of the world. It was originally cultivated for its fruit in India, New South Wales, and the Cape, but is now completely naturalised in the two last regions. It established itself in suitable localities with very great rapidity; Drummond, who planted the first example in the Swan River Colony, states that it was perfectly naturalised there in the short space of ten years, and it is now widely spread throughout Australia. In New South Wales it was held in great esteem by the earlier colonists, and was indeed the chief fruit which they possessed; whether eaten raw or made into pies, puddings, or preserves, the Cape Gooseberry met with general approval. In Mauritius and Rodriguez it is well established, and is completely naturalised throughout the Cape district; it is found in the Sandwich Islands and is common throughout Fiji. In the Sandwich Islands (where it may possibly be indigenous) two varieties occur, one with a berry as large as a Hazel-nut, the other in which it is about as big as a Pea; both are employed in making pies and tarts by the colonists. It is also naturalised in Madiera, Java, the Philippines, the Canaries, and many parts of India, and is, or has been, established in parts of central Spain, and in the Island of Sicily. It was cultivated in Kew Gardens exactly a hundred years since; and is figured (under the name of P. edulis) in the "Botanical Magazine," t. 1068.—B. J.

Epiphyllums.—Mr. Speed sends us from Chatsworth some beautiful seedling varieties of these, some purple kinds being particularly remarkable. These useful winter-flowering plants are exceedingly well done at Chatsworth, and we know of none more worthy of attention; their graceful habit, easy culture, and now charming variety of delicate colours all especially recommending them to our notice.

A Welcome Gift.—The rich garden of the late M. Thuret, of Antibes, which contains such a valuable collection of plants, will now be exclusively devoted to State uses, and form a branch of the Museum of Natural History. Mdme. Louise Fould has given £8000 for the purchase of the property for this purpose, and the Minister of Public Instruction has been authorised to accept the noble gift.

Orchids Effectively Arranged.—In one of Mr. Bull's Orchid-houses, I noticed, the other day, well-flowered plants of Oncidium Barkeri and O. ornithorhynchum associated with Odontoglossum Bictonense and O. crispum in such a way as to be very effective. Other combinations consisted of a mixture of the flowers of Calanthes with those of Odontoglossums, Sophronitis, and Lælias, the whole being set off by a groundwork of Cypripedium insigne, the flowers of which were produced in great profusion. In the same house were also in flower Cypripedium Stonei, the richly-spotted Vanda tricolor and V. t. insignis, a beautifully-marked variety of Odontoglossum Insleayi Leopardianum, and the waxy-flowered Colax jugosus.

Plants in Flower in the York Nurseries.—At this, the dullest time in the whole year for Alpine and herbaceous plants, it may be interesting to note what plants are now in flower, or even partially so. The following are a few which I noted on the rock-work at York, viz.:—Erodium Manescavi, Pyrola rotundifolia, Veronica amethystina, Helleborus niger, H. n. maximus, H. lividus, H. orientalis, and H. fœtidus, Aubrietia græca var. superba, Polygala Chamæbuxus purpurea, Iberis Bubani, Colchicum autumnale fl.-pl., Primula acaulis, Arabis procurrens, Botryanthus pallens, and Veronica rupestris.—R. P.

Meconopsis nepalensis in Winter.—There is a quantity of this noble and singularly beautiful Poppywort growing in the herbaceous grounds at the York Nurseries—some of them in the open peat beds, where they are very vigorous. The leaves are produced in a circle radiating from a common centre—the lower or larger leaves lie close upon the ground, while the younger and smaller ones are erect or sub-erect, and beautifully and densly clothed with long hairs, causing them to resemble, when dry, leaves made of lamb's wool. The crowns are from 12 in. to 18 in. in diameter, and with from sixty to eighty leaves to each. It flowered in the York Nurseries last summer, and was very pretty; but I consider it is equally beautiful in its present state.—R. P.

Pampas Grass and Arundo conspicua.—In Mr. Fraser's work on trees, he speaks of the Pampas Grass coming into flower in July, which, I think, must be a mistake. Here, in the north of Ireland, it rarely flowers till November, and this year it is later still, as my plants, although well sheltered, are only now (December 3) showing the inflorescence. The lateness of the flowering of the Pampas greatly detracts from its value for decorative purposes, as its appearance is disfigured, and its culms broken by the rains and winds of November and December. As an ornamental plant I give a decided preference to the Arundo conspicua, which flowers with me about the end of July, and is even now in considerable beauty. A group of three or five of these plants placed on a lawn in front of a Pine, Cypress, or other dark-foliaged tree or shrub, has a grand effect, the slender, plume-like panicles being in constant graceful motion stirred by the slightest breeze. This Arundo is easily raised from seed, is quite hardy, and deserves a place in every collection of ornamental plants.—WILLIAM VALENTINE, *Glenavna, Whiteabbey.*

Waste Lands and Fruit Culture.—The French Societé d'Encouragement offers a prize of 1000 francs (£42) for the best plan for utilising waste lands in fruit culture. Essays must be sent in by 31st December next.

Prizes for Plans of Flower Gardens are offered by Mr. John Downie, to be competed for by under gardeners, members of the Scottish Horticultural Association. The plans are to be sent in to the secretary of the association by Feb. 1, 1878.

Another Park for Birmingham.—Mr. Marnock has been called in to lay out another park in Birmingham. It is at Small Heath, and was presented to the city by Miss Ryland. It is about 40 acres in extent and valued at £30,000.

A New Lapageria.—Mr. Bull exhibited, at South Kensington, the other day, a spray of Lapageria rosea superba, from 15 in. to 18 in. long, bearing twenty large richly-coloured blossoms. This will make a good addition to the red and white kinds already in cultivation.

Lasiandra macrantha floribunda.—This Melastomad, which is now flowering freely in several of the London nurseries, is one of the best plants which can be grown for greenhouse or conservatory decoration in winter. Bushy plants of it in 6-in. pots, if well grown, will yield an abundance of large bluish-purple blossoms for many weeks in succession.—S.

Two Good Primulas.—In a collection of double-flowered Primulas in Messrs. Lee's nursery at Isleworth are two kinds which should be largely grown for conservatory decoration, and also for furnishing cut flowers. One, named Prince Arthur, has bright pink flowers, and the other, which is called alba magnifica, has pure white ones. In both cases the colours are decided, thus rendering these varieties more valuable than kinds having streaked and spotted blossoms.—S.

Fuchsia Dominiana.—This is one of the best Fuchsias which can be grown for conservatory decoration in winter. It is robust in habit; its leaves are large, and of a healthy bronzy-green colour; and its flowers, which are produced freely, even during the dullest part of the year, are rich rosy-scarlet in colour. Several good specimens of it may now be seen in Messrs. Veitch's nursery at Chelsea, where it was raised, being the result of a cross between F. spectabilis and F. serratifolia.

Pansies in Scotland.—As a proof of the mildness of the season in Scotland, we are exhibiting, in our winter gardens, Pansy blooms, consisting of both show and fancy sorts, cut from the open border; many of the blooms would not disgrace a stand in June. The other day we filled a stand of thirty, and could easily have furnished 100 such blooms.—Downie & Laird, *Pinkhill Nursery, Corstorphine.*

A Large Fruit Cargo.—The steamer "Discoverer," which arrived in the Mersey a few days since from the Spanish ports of Velencia, Almeira, and Malaga, brought the largest cargo of fruit, it is believed, ever imported into the port of Liverpool, and probably the largest ever carried in one vessel. The cargo in question consisted of 22,559 boxes of Raisins, 21,940 barrels of Grapes, and 6443 boxes of Oranges, &c. The combined cargo weighed 1600 tons, of which the Grapes alone weighed upwards of 800 tons.

New Public Park for Wishaw.—This, the gift of Mr. J. Houldsworth, of Coltness, is situated to the east of the town, at the foot of the rising knoll on which stands the parish Church of Cambusnethan. It is exactly eight acres in extent, and is being laid out with considerable taste; excellent pathways have been made through it, and in time it will be stocked with plants and shrubs and trees suitable for its embellishment. A skating and curling pond, situated at the east end of it, has been diminished on the east side and enlarged on the north, so as to increase the size of the park. In addition to presenting the ground, Mr. Houldsworth has spent over £2,000 in making it suitable for the purpose for which it is intended.

A NOVEMBER ROSE.

O late and sweet, too late, too late!
What nightingale will sing to thee?
The empty nest, the shivering tree,
The dead leaves by the garden-gate
And cawing crows will for thee wait,
O sweet and late!

Where wert thou when the soft June nights
Where faint with perfume, glad with song?
Where wert thou when the days were long,
And steeped in summer's young delights?
What hopes thou now but checks and slights,
Brief days, lone nights?
—"Atlantic Monthly."

FROM KEW.

Several plants of considerable interest and beauty are now to be seen in flower at Kew, in spite of the very unfavourable wea Dombeya Burgessiæ, a Byttneriaceous shrub, from South Africa, has large, fragrant, white, rosy-disked flowers. The genus Dombeya is a very beautiful one, almost peculiar to Tropical Africa and its eastern islands. A very large-flowered Rubiaceous plant from Sierra Leone, Randia longiflora, has yellowish blossoms about 1 ft. long. Randia is nearly allied to Gardenia, and the present species has flowers very similar in shape and size to some of the largest-flowered Gardenias. A deep blue Indian Acanthad, Eranthemum nervosum, is certainly worth a place in a select collection of stove plants; its colour is very taking. Cratoxylon ligustrinum, from China, belongs to the St. John's-wort family, and has opposite, glossy leaves and terminal panicles of white flowers. Pancratium speciosum is a very handsome West Indian Amaryllid, often confounded with P. caribæum. From the latter species, however, it is abundantly distinct, and is easily recognised by its long-stalked leaves (the leaves in P. caribæum are not stalked). The large umbel of pure white flowers is extremely ornamental and very fragrant, especially in the evening; the dried blooms retain their scent for many months. The tropical American Pitcairnia fulgens has narrow arching leaves, and panicles of bright red flowers. All the Pitcairnias are desirable stove plants. Strelitzia ovata has now several blooms expanded, and S. Reginæ will be in flower very soon. Both are strikingly handsome plants, and are among the most splendid members of the Natural Order Musaceæ. The latter species was introduced to Kew by Sir Joseph Banks in 1773, and the former is recorded as having been introduced four years later. The long-stalked, glaucous leaves are about 4 ft. long; the flower-stalk is about the same length, and is crowned by the obliquely-placed, spathe-like bract, within which are the flowers. These are very gorgeous, the three outer perianth segments being bright glossy orange, and the three inner azure-blue; the two inner lateral ones are united into a sort of tube which encloses the stamens. The two species, both of which come from the Cape of Good Hope, will do well under greenhouse treatment, but, in that case, flower some months later. The above are selected from the Palm-house.

In the stove are several pots of a very pretty bulbous plant, lately imported by Mr. W. Bull, from the mountains of the province of Bogota, in New Grenada; it is Calliphruria Hartwegi, and is the only known species of the genus. From the rosette-like tuft of neat, bright green, glabrous leaves, springs a scape, about 1 ft. long, surmounted by an umbel of six or eight pure white flowers; the tube of the perianth is about 1 in. long, and the diameter of the almost horizontally-spreading segments is the same.

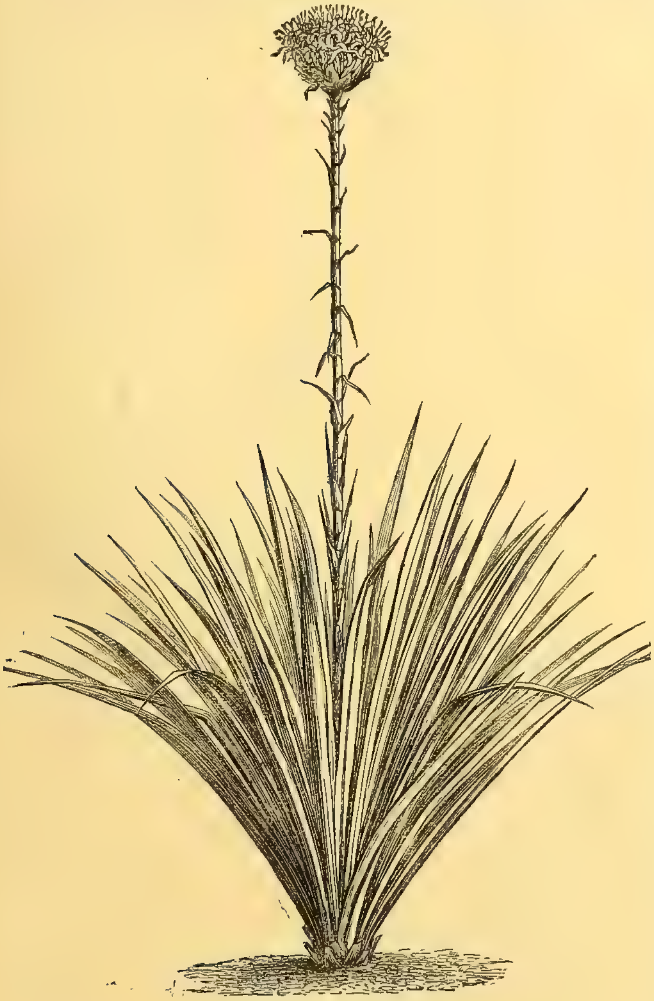
Masdevallia melanopus is similar in habit to M. polysticta, noted last week, and is about as floriferous as that species, though much inferior to it as a decorative plant. Oncidium cheirophorum has bright, sparkling yellow flowers, and neat, narrow leaves. From the letterpress accompanying the figure in one of the later numbers of the "Botanical Magazine," we learn that it was discovered by Warscewicz, on the volcano Chiriqui, in New Grenada, at an elevation of 8000 ft., flowering in December, with the thermometer some few degrees above the freezing point. It is a very charming little species, and possesses the extra merit of being sweet-scented. The tall stems, somewhat like a sugar cane in habit, and the drooping panicles of large flowers, render Ansellia africana very attractive; this Orchid was first discovered growing on Oil Palm trees, near Fernando Po, by Mr. Ansell, who accompanied the Niger Expedition, and after whom it is named. It, however, does not seem to require epiphytal treatment under cultivation; the waxy flowers are yellow, blotched with reddish-brown, and last a long time in perfection. Angræcum eburneum, and its variety virens, though boasting neither brilliancy of colour nor fragrance, are very noble and desirable plants; the former has a large, ivory-white lip, the remainder of the flower being green; the latter has a greenish-white lip, and is not nearly so handsome as the former. These two plants are from that exceedingly rich and comparatively little-explored store-house of botanical treasures, the island of Madagascar. The Mexican Lælia furfuracea has one-flowered scapes, the flower being of a fine, warm rose colour. Angulosa Clowesi has very thick, waxy, yellow, sweet-scented flowers, and is a very distinct and beautiful Orchid.

In the greenhouse (No. 4) is an almost forgotten Rosaceous plant from China, Raphiolepis salicifolia; it has terminal panicles of white flowers, which last a long time, and answer well for bouquets. Mons. Carrière states that this pretty shrub forces readily. We have not heard of its growing in the open air, but as R. ovata, also from China, is certainly hardy in the south of England at least, there is a probability of the other species being so. R. ovata bears good-sized purple berries, which are said to make good tarts and preserves. A pretty, Rosemary-like Labiate from Australia, Westringia eremicola, is also in bloom; it is a neat-growing shrub, with narrow whorled leaves, and pale-blue flowers.

THE INDOOR GARDEN.

DORYANTHES EXCELSA.

This strong-growing Amaryllidaceous plant from Australia consists of a number of long, stout, lanceolate leaves, somewhat erect in growth, from the centre of which springs a tall, straight flower-stem, partially clothed with bracts. The flowers, which are each about the size of those of the common white Lily, are borne in a bunch on the top of the stem, and are of a bright scarlet colour. It is one of the most gorgeous plants in cultivation, and one very easily managed, requiring simply ordinary greenhouse treatment. As regards soil, it does well in a sandy loam, and, owing to its vigorous habit, it needs a good-sized pot, in order to enable it to attain sufficient strength to exhibit its true character. It should have plenty of water while in active growth; but, during the dormant season, the soil in which it is growing should be kept in a tolerably dry state. B.



Doryanthes excelsa.

Luculia gratissima in America.—This is one of those plants which could not be obtained in this country a few years ago. We imported it from Europe several times, but it was found, on its arrival, to be dead. At last, however, two plants of it were alive, one of which I planted in the Camellia-house and the other went to California; that was three years ago. Last year we had on our plant upwards of fifty fine heads of bloom; this year there are over 100 heads on it, and we have a good stock of young plants obtained from cuttings during the summer. Some consider that this plant requires stove heat, but I find when it is grown in heat that insects are troublesome, while, in a cool house, they are easily kept in check. This is no new discovery, for I planted two plants of it in the Camellia-house at Chatsworth some years ago, and they grew and flowered profusely; but, in the moist, dull climate of England, the flowers do not last so long as they do here, and in a very cold house, I think, they are not so sweet scented. The Luculia is not fastidious as regards soil; I have grown it in a mixture of two parts loam and one part peat, giving it, when thoroughly established, a mulching of good horse manure, and also a good soaking of manure water when in full growth. It is, I may add, a very thirsty plant, and requires an abundance of water at all times when in active growth. It should be cut well back after flowering, an operation which encourages the production of both foliage and flowers from bottom to top, and it will make shoots of 6 ft. or more in length in one season; therefore, if not cut back, it requires a very lofty house to accommodate it. Green fly is rather troublesome, especially when it is making young growth, and, later in the season, thrips attack it, but either fumigation or syringing with Tobacco-water will be found to be a sure remedy.—Jas. Taplin, *South Amboy, New Jersey.*

JAPANESE CHRYSANTHEMUMS.

It is worthy of remark that, while the Japanese Chrysanthemums have generally been regarded as blooming much later than the ordinary kinds, they have this season flowered quite as early, and, indeed, in many instances earlier. While the lateness of the season has affected, in a remarkable degree, the varieties of one type, the varieties of the other have not shared the general retardation. At the Chrysanthemum shows that have recently taken place, the Japanese varieties have been exceedingly attractive, and, on the whole, very fine; and, in addition, they present so much variety of form, such uncouth and eccentric shapes, and such brilliancy of hues, that it is not to be wondered at they are so much admired by the general public. I noticed at the recent Chrysanthemum exhibition at the Royal Aquarium, that by far the greatest pressure of visitors gathered round the stands of the striking Japanese Chrysanthemums. Of the newer varieties which have been distributed during the past few years, the following have proved very fine:—Diamond, bronze, shaded with orange, a large, full, very distinct-looking flower; Peter the Great, lemon-yellow, of great size, and very showy; Red Gauntlet, dark crimson, quite a new colour, very fine indeed; Sarnia, pale lilac, of a very delicate tint, distinct and very pleasing; Mr. Barnes, rich buttercup-yellow, flowers large and full; and R. T. Biggs, rich deep crimson, very attractive indeed. Some other fine varieties will be found in Jupiter, pale magenta-pink; Soleil Levant, clear yellow; Royal Soleil, orange-crimson; Baron de Prailly, clear pink, very good; Emperor of China, pale blush, nearly white; Bronze Dragon, Golden Dragon, and Red Dragon; Magnum Bonum, clear lilac, very fine; Fulgare, bright purplish-lilac, very good and distinct; and, of those more generally grown, such flowers as Comte de Beauregard, very fine; Dr. Masters, Chang, Elaine, Fair Maid of Guernsey, Garnet, a very rich crimson hue; Grandiflorum, golden-yellow; James Salter, very fine; Mons. Chas. Hubert, reddish-chocolate, very fine; Oracle, Plantagenet, yellow shading to orange, very fine; The Cossack, The Damio, and Viceroy of Egypt, rosy crimson. Of varieties not yet distributed, but which will be put into commerce next spring, the most remarkable are Fulton, fine golden yellow, very rich in colour and very showy; and La Nymphe, delicate pink, with pale lemon centre, very distinct and attractive. Nora, To Kio, Nuit d'Hiver, and Emperor Nicholas, are also very promising. The Japanese varieties should be grown against warm, sunny, south walls, or under glass, as they are undoubtedly late, and cannot be expected to succeed in the open air. Nor is it of much use to plant Chrysanthemums in the open air with a canvas covering for protection when frost or bad weather threatens. The flowers come on very slowly indeed, and there is nothing like glass over them in autumn.

To have a good succession of Japanese Chrysanthemums, both for house decoration and cutting from, some good cuttings should be taken in February, struck in a little heat, and grown on as vigorously as possible, but in a cool temperature, to keep them vigorous. The best specimens for flowering are made when the plants are 2 ft. or so from the ground; they break out into three or four leading shoots, and bloom at the points. The earliest varieties should have the side buds taken out, leaving the centre ones, as these will bloom quickly. For successional blooming, take out the centre bud, and the result will be that three or four buds will be thrust out on either side, making two stems, 3 in. or 4 in. in length. These flowers will not be so fine as those formed by the centre bud, but they will be of great service for decorative purposes. Many Chrysanthemum plants are nearly ruined from want of attention during the summer; they are allowed to languish for want of water; the plants make a spare growth, lose their leaves, and cannot be expected to do well. It is because there is so much necessity for keeping the roots cool and moist while the plants are growing vigorous, that it is the usual practice to plunge the pots in ash beds during the summer. Copious waterings overhead are also of great value; and, indeed, the Chrysanthemum is a great lover of moisture in whatsoever way it may be administered. Manure water is also indispensable at the time the buds are in course of formation. That recommended by Chrysanthemum growers is made by putting into a large tub or tank a barrow-load of fresh cow manure, on this a quantity of hot water is poured, a barrow-load of soot is added, and then rain-water enough to fill the vessel; the whole should be well stirred for a few days, and it should be allowed to settle before being used.—D. [We hope efforts to raise "Japanese" Chrysanthemums, devoid of the picturesque aspect of those originally introduced, will not succeed in destroying these really precious additions to our autumn flowers. The ideal of a ball might well be forgotten in their case.]

STORING SOIL FOR POTTING.

As this is the season when a supply of good turfy soil for potting purposes is required to be got in for storing, it may be noted that in most places there is great difficulty in procuring it. Cultivators in numerous instances have to put up with most unreasonable shifts in getting a supply, although they are expected to produce first-rate plants and fruits in due season. The fine "turfy loam" and "fibry peat" has often to be procured by stealth, and this only in quantities enough to grow a few plants of the rarer kinds. The policy of compelling cultivators to take what soil they can get, and prohibiting them from taking a supply of that which is proper, is not at all profitable to their employers. They will not allow the gardener to take a few cartloads of turfy soil from a field, for fear the land will be permanently deteriorated, even though he says he will replace it with a richer and better Grass-producing soil. A method of getting some good fibry soil from a meadow containing it is to mow the Grass off very closely, and then skin the turf off as thin as to bear handling; then to take about 3 in. of the maiden loam beneath, and fill up the space with rich garden soil, relaying the skin of turf on the surface, and rolling all well down. Next summer this patch will produce richer and earlier Grass than the rest of the field, if it be well solidified by rolling, and by sowing the seeds of some permanent Grasses thickly on it. In thus pointing out the groundlessness of the notion that cultivators deteriorate the value of Grass land by skimming off the turf on the surface, it is yet but right on their part to be as sparing as possible in regard to the supply. A great deal more use might be made of charred refuse, and of the soil shaken out of the pots and consigned to the rubbish-heap from the potting benches. If this were sifted out and stored into a heap, it would be found very useful for mixing with fresh soils. As peat soil is only found good for potting purposes in a few localities, it is requisite to be as sparing of it as possible, and only to get a supply to supplement any sandy or leafy soil that can be procured on the place.—William Tillery, in "Florist."

Cyclamen Sports.—Last year one of my Persian Cyclamens produced three flowers on a stem, and this year the same bulb or corm has thrown up about 100 flower buds, and on one stem there are three flowers, and three leaves at the top of it; the stem is about 2 in. long, and the leaves and flowers are just showing. Is this usual?—A. Longley, *Blakesley, near Towcaster.*

Jasminum Sambac (see p. 489).—Perhaps Mr. Greenfield is correct; my plant may not be J. Sambac, though so named, as I thought, on good authority. It has been for the last four months in a cool house; it is in perfect health, and promises to flower profusely in a couple of months. I would feel greatly obliged if Mr. Greenfield would let me have a bloom off his plant.—Thos. Spelman, *Derry Castle, Killaloe, Co. Clare.* [The plant sent is Jasminum Sambac.]

Goodyera Rollissoni.—"S." says (see p. 490) that this Goodyera was exhibited for the first time in 1876, but that is a mistake; G. Rollissoni, which is the same as G. Veitchii, was raised by Mr. Dominy at Messrs. Veitch's nursery some eighteen years ago, and was sent out by that firm. It is a cross between G. discolor and Anæctochilus Veitchii, and was named Goodyera Veitchi. How it comes to be sent out by Messrs. Rollisson it is impossible for me to say. Is it possible that the same plant has been raised in two different establishments? Be that as it may, I feel sure that Messrs. Rollisson would be the last to deprive Mr. Dominy of the honour of having raised it.—J. Speed.

They are now converting the Square Notre Dame into a garden. In the course of necessary excavations many remains of ancient buildings have been found.

The executors of the late Dr. Welwitsch have placed the following inscription on his tomb in Kensal Green Cemetery:—"Fredericus Welwitsch, M.D., Botanicus eximius, Floræ Angolensis investigatorum Princeps. Nat. in Carinthia, 25 Feb., 1806; ob. Londini, 20 Oct., 1872." The inscription is surmounted by a Welwitschia plant carved in relief.

IMPROVED CATERPILLAR-NEST DESTROYER.

If towards the end of June, or somewhat later, we walk through any extensive fruit-growing district, we can scarcely fail to come here and there upon a tree partly denuded of its leaves, the barer portions being festooned with a web-work that serves as the encampment of a numerous army of caterpillars. Supposing that it is an Apple tree which is thus attacked, closer examination of the assailants will probably show them to be caterpillars of the Allied Ermine Moth (Hyponomeuta cognatella), and, unless the culturist takes prompt and radical measures to ensure the destruction of the insects, every tree presenting the above appearance will, in all probability, be completely defoliated, and yield little or no fruit. One of the commonest remedies adopted consists in cutting off the affected parts with a pair of shears; but, in some instances this would entail the loss of too much fruit-bearing wood, and recourse is then frequently had, especially in the case of the higher branches, to a lighted lamp or torch; a calm, fine day being selected for burning the caterpillars and their nests. Of the different so-called "caterpillar lamps," specially constructed for this purpose, one of the most practical is that represented by the annexed illustrations; fig. 1 shows the wick and burner, fig. 2 the complete apparatus. The height of the latter (including the hollow stand or holder) is about 15 in., whilst the oil reservoir has a diameter of 2½ in. The holder is made hollow so as to allow of a rod or handle being fixed into it; the chief advantage of this over Mader's and other lamps of the kind, is that the reservoir remains upright and does not permit the oil to escape when the rod is held in a slanting direction. To Mr. Frank, of San Michele, in the Tyrol, we are indebted for the above improvement in construction. T. S.

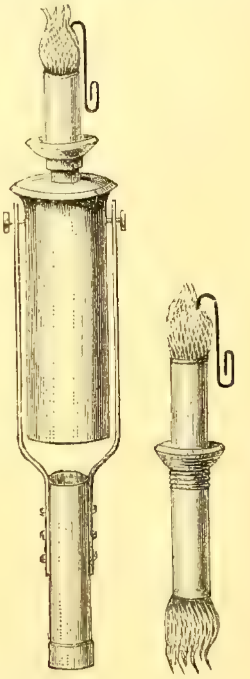


Fig. 2. Fig. 1.

Improved Lamp for Destroying Caterpillar-nests.

New Double White Violet.—A new double white Violet, named Belle de Chatenay, has lately been introduced from France, and will form a good companion to the Neapolitan. It is now flowering freely in Messrs. Lee's nursery at Isleworth, where there is a good stock of it. The plant is a profuse bloomer, and comes into flower at Christmas with very little forcing. Its flowers, on established plants, are very double, and about the size of a shilling. In the bud they are of a delicate mauve colour; but, as they expand, they become pure white. For button-hole bouquets this Violet will be invaluable.—S.

THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

(Continued from page 529).

Mountain Floras.—There is one more source from which we obtain many plants, namely, the mountains of the sub-tropical and tropical countries; in the former, broadly speaking, those growing at an altitude of more than 5000 ft. are hardy in this country, and, in the tropics, those found above 10,000 ft. Of course, these figures, like most of those given here, are the approximations, and about the extreme limits, as no such thing as a leap of 5000 ft. occurs in Nature.

Geographical Distribution of Garden Plants: Palms naturalised in Southern Europe.

Extent of Country from which we Obtain Hardy Plants, and Number of Species. — Altogether more than a third of the surface of the dry land, which is estimated at 52,000,000 square miles, comes within our region of hardy plants; and the number of species it supports must be upwards of 25,000. In a certain restricted sense, the region of plants hardy in Britain—excluding, of course, the Arctic zone and the mountain heights of corresponding climate—coincides with the region in which the cereals—Barley, Rye, Oats, and Wheat—can be profitably cultivated, though all of them, but especially Wheat, are cultivated in sub-tropical countries, where the crop is harvested during the cooler season. Wheat is not a profitable crop in countries where the mean summer temperature is below 60°, and it is only sparingly grown above 60° N. lat. in Western Europe. It is most productive in the warmer part of the temperate zone bordering the sub-tropical. Barley and Rye are much hardier, and are cultivated in the exceptionally favourable (for latitude) climate of North-western Europe up to 70° N. lat., or at some distance within the Arctic circle.

Number of Species found within the Arctic Circle.—Within the Arctic regions, about 800 species have been collected, and they are chiefly remarkable for their wide range in distribution; only 1 per cent. of them have not been found beyond. Flowering plants have been found in almost the highest northern latitudes trodden by the foot of man; and, in Spitzbergen alone, upwards of 100 species have been detected.

No Plants Found within the Antarctic Circle.—Although we often read of Antarctic vegetation, and there are cultivated plants named antarctica, as Dicksonia antarctica, there is no zone of vegetation in the southern hemisphere corresponding to that of the Arctic in the north, for not a single plant has been discovered within the Antarctic circle. Of the numbers of strictly Alpine species not found also in the Arctic regions, it is difficult to form an estimate; but they number several thousands; and those of the northern hemisphere are, for the greater part, different from those of the southern.

Definition of Alpine and Arctic.—The word Alpine or Arctic is properly restricted to those plants which do not occur in a wild state outside of those regions in which the amount of heat is insufficient to ripen our hardiest cereals. The Alpine plants in cultivation are chiefly European, and are almost, without exception, herbaceous perennials, or dwarf shrubs. Indeed, monocarpic or annual plants are exceedingly rare in frigid regions. It would unduly extend this part to no useful purpose, to enter more into detail respecting Alpine plants; but the plants of the temperate regions, being the most interesting and important of all, a few more particulars will not be out of place. Food plants will be treated of elsewhere. The others will be treated of generally, according to their native regions. The lists given below are by no means exhaustive; but they include most of the characteristic plants of each region, and give at a glance something approaching a true picture of the manner and extent in which different countries have contributed to our parks, shrubberies, and flower gardens. Half-hardy annuals and other herbaceous plants employed for summer embellishment are purposely excluded, as they more properly find their place among greenhouse plants.

British Plants Cultivated.— Before reviewing the exotic cultivated hardy plants according to their regions, let us take a glance at the indigenous cultivated forms. Although, as already stated, there is not a single distinct species of plant, native or growing wild, in the United Kingdom, which is not found elsewhere, our indigenous vegetation has contributed a large number of useful as well as ornamental forms and varieties, now cultivated in gardens.

Ornamental Native Species.—They consist of double-flowered varieties of various plants, as: Ranunculus acris (Buttercup), Papaver Rhœas (Poppy), Viola odorata (Violet), Spiræa Filipendula (Dropwort), Ulex europæa (Furze), Cratægus Oxyacantha (Thorn, of various colours), Bellis perennis, &c. Of water plants, as: Nymphæa alba (White Water Lily), Nuphar lutea (Yellow Water Lily), Hottonia palustris (Water Violet), Sagittaria sagittifolia (Arrowhead), Butomus umbellatus (Flowering Rush), Typha (Reedmace), large-growing Sedges,

&c. Of variegated, coloured, or cut-leaved, or weeping varieties of trees and shrubs, as: Ash, Oak, Beech, Elm, Lime, Willow, Alder, Elder, Birch, Box, Holly, Ivy, Yew, &c. A very few are cultivated on account of the beauty or odour of their flowers; amongst them Aquilegia vulgaris (Columbine), Geraniums (various), Viola odorata, Saxifraga umbrosa (London Pride), Centaurea Cyanus (Blue Cornflower), Achillea Millefolium (Yarrow), Lysimachia nummularia (Creeping Jenny), Myosotis sylvatica (Forget-me-Not), Digitalis purpurea (Foxglove), Armeria vulgaris (Thrift), &c.

Useful Native Species.—In addition to the foregoing indigenous plants, the following have long been cultivated as vegetables, &c.: Anthemis nobilis (Camomile), Apium graveolens (Celery), Crambe maritima (Sea Kale), Cichorium Intybus (Chicory), Daucus Carota (Carrot), Fœniculum vulgare (Fennel), Humulus Lupulus (Hop), Inula Helenium (Elecampane), Marrubium vulgare (Horehound), Nasturtium officinale (Water Cress), Pastinaca sativa (Parsnip), Sinapis alba (Mustard), Taraxacum Dens-leonis (Dandelion), and Valerianella olitoria (Corn Salad). It is also possible that some of the varieties of Brassica oleracea (Cabbage, &c.) and B. campestris (Turnip, &c.) are indigenous, but this is very uncertain, and almost beyond proof now. Nevertheless, our flora includes a good proportion of useful plants, and, doubtless, the number might soon be increased should occasion arise. We leave out of the question trees and shrubs planted for their timber, &c.

Cultivated European Species.

General Character of the Flora.—This region is characterised by the relatively small number of different kinds of trees constituting its forests, and the large number of herbaceous plants. The Cruciferæ (Cabbage family) and the Umbelliferæ (Celery family) find their greatest concentration through Central Europe and Asia to China. Being nearer than any other part of the world to us, many of the species enumerated below were amongst the earliest exotic plants introduced; and this, with the Mediterranean region, contributed a large proportion of our hardy food plants. According to Gerard, the Laburnum was in cultivation in this country in 1596.

Trees and Shrubs.

Clematis flammula
,, viticella
Hypericum calycinum
Tilia europæa (Lime)
,, alba
Acer platanoides (Maple)
,, monspessulanum
Staphylea pinnata
Laburnum vulgare
Colutea arborescens
Amelanchier vulgaris
Philadelphus coronarius
Rhododendron hirsutum
Erica carnea
Vinca major
Daphne Cneorum
Pinus austriaca
Abies excelsa
,, pectinata
Larix europæa

Herbaceous Plants.

Anemone hepatica
,, angulosa
Adonis vernalis
Ranunculus aconitifolius
Helleborus niger
Arabis albida
Lunaria biennis
Alyssum saxatile
Silene, various
Coronilla varia
Eryngium alpinum
Centranthus ruber
Campanula, various
Gentiana ,,
Myosotis ,,
Verbascum ,,
Linaria ,,
Antirrhinum majus
Veronica, various
Salvia ,,
Primula ,,
Androsace ,,
Globularia ,,
Crocus ,,
Iris ,,
Galanthus ,,
Leucojum ,,
Narcissus ,,
Tulipa ,,
Scilla ,,
Asphodelus ,,
Anthericum ,,
Veratrum ,,
Bulbocodium vernum

Kitchen Garden Plants.

Asparagus officinalis, Asparagus
Allium porrum, Leek
Beta vulgaris, Beet
Borago officinalis, Borage
Brassica oleracea, Cabbage
Brassica campestris vars., Turnip, &c.
Cochlearia Armoracia, Horseradish
Carum Carui, Caraway
Salvia Sclarea, Clary

Garden Plants from the Mediterranean Region.

Description.—This region comprises, for our purpose, all the countries bordering the Mediterranean Sea, that is to say, the South of Europe, North Africa, and Asia Minor. Doubtless some of the plants enumerated below have migrated from countries eastward of Asia Minor; but it is now very difficult to determine where they are really indigenous. It was from this region that the more northern parts of Europe obtained the cereals—Barley, Rye, Oats, and Wheat—and most of the fruit trees, and where, possibly, they are, or were, indigenous. The accounts of travellers on this point are contradictory and unsatisfactory, and can only be regarded as opinions of unequal value. The countries of the Mediterranean region, at sea-level, enjoy a mean annual temperature of nearly 60°; and, therefore, few of the plants are really hardy, except in the milder parts of the kingdom. But the majority of the species we obtain from this, the southern limit of a temperate climate in the Old World, inhabit the mountains and colder parts. On the other hand, some descend to the sea level, and are, at the same time, able to brave our winters.

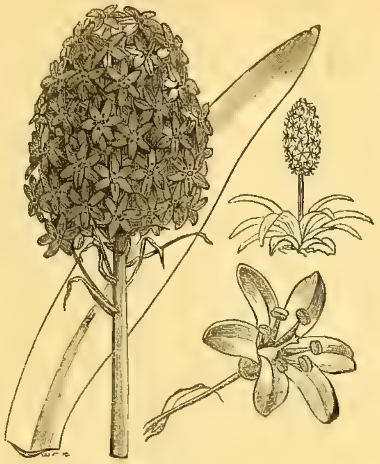
The Source of the First Exotic Evergreen Shrubs Introduced into this Country.—From an examination of the following lists we learn that it was these countries which first enriched our gardens with ornamental evergreen trees and shrubs, many of which are still very highly cherished, and some are almost universally planted, though they have to compete with numerous more recently-introduced rivals from Japan, North America, and other parts of the world. It will be seen, also, that many of the most highly-esteemed herbaceous plants, the old favourites, came to us from the shores of the Mediterranean. Some of them, it is true, have been replaced by less worthy occupants in our gardens, but others remain. Here and there in this region Palms and other tropical and sub-tropical plants are naturalised with great success, and in many places afford effects even more striking than those of the native flora, as, for example, the Palms at Bordighera, as shown in our illustration (see p. 537).

Characteristic Features of the Flora.—Characteristic features of the vegetation of the Mediterranean region are the predominance of evergreen trees, of shrubs belonging to the Leguminosæ (Broom family), Cistineæ (Gum Cistus family), of herbaceous plants belonging to the Labiatæ (Salvia family), to the Caryophylleæ (Pink family), and to the Compositæ (Aster family). Of the last family alone there are nearly 2000 species belonging to about 150 genera. The dates, or approximate dates, of the introduction of some of the trees, shrubs, and herbaceous plants which are now to be met with at almost every turn, and which have, to a great extent, metamorphosed the face of park and garden scenery, being of great interest in the history of gardening, are appended, in order to enable the student to appreciate the degree to which they have taken possession of the soil, or rather, have been put into possession of the soil, in a given time. In many cases it is impossible to fix the dates with any degree of certainty. It is assumed that the Romans introduced many useful and ornamental plants during the nearly 400 years they held sway over this country, and subsequent religious communities many others. Turner in his "Herbal," published more than 300 years ago, mentions the Almond, Apricot, Peach, Cistus salviæfolius, Rosemary, Thyme, Fig, Plane, Elm, Sweet Bay, Mulberry, White Jasmine, Spanish Broom, &c.

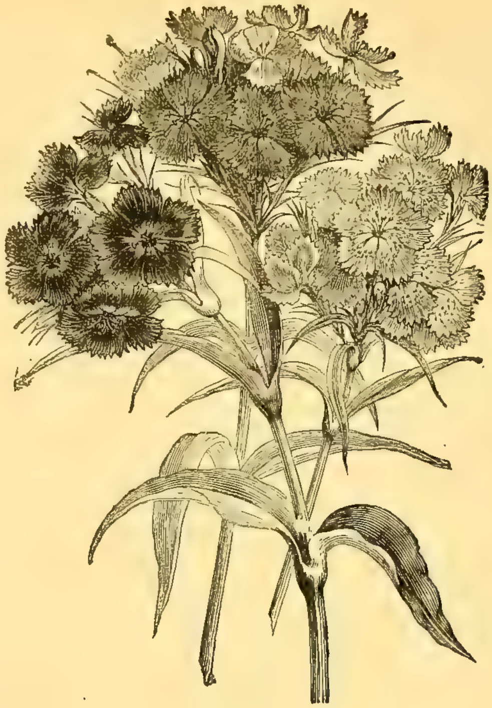
Evergreen Trees and Shrubs.

(With Date of Introduction or first Record of Cultivation.)

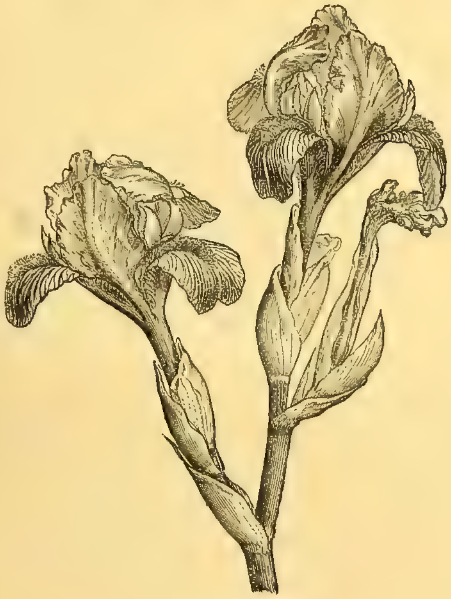
Cistus laurifolius, Gum Cistus, 1731
,, ladaniferus, 1629
,, populifolius, 1656
Tamarix gallica, Tamarisk
,, germanica, 1582
Prunus Laurocerasus, Common Laurel, 1629
Prunus lusitanica, Portugal Laurel, 1648
Myrtus communis, Myrtle, 1597
Viburnum Tinus, Laurestinus, 1596
Arbutus Andrachne, Arbutus, 1724
Rhododendron ponticum, 1763
Erica arborea, Winter Heath, 1658
Erica codonodes
Phillyrea, various, 1597
Lavandula vera, Lavender
,, spica, ,, 1568
Rosmarinus officinalis, Rosemary, 1548
Laurus nobilis, Sweet Bay, 1548
Buxus balearica, Broad-leaved Box, 1780
Quercus Ilex, Evergreen Oak, 1581
Pinus Pinea, Stone Pine
,, maritima, Sea Pine
Abies Nordmanniana, Crimean Fir
,, cephalonica, Cephalonian Fir
,, Pinsapo, Spanish Fir
Cedrus atlantica, Silver Cedar
,, Libani, Lebanon Cedar
Ruscus racemosus, &c.



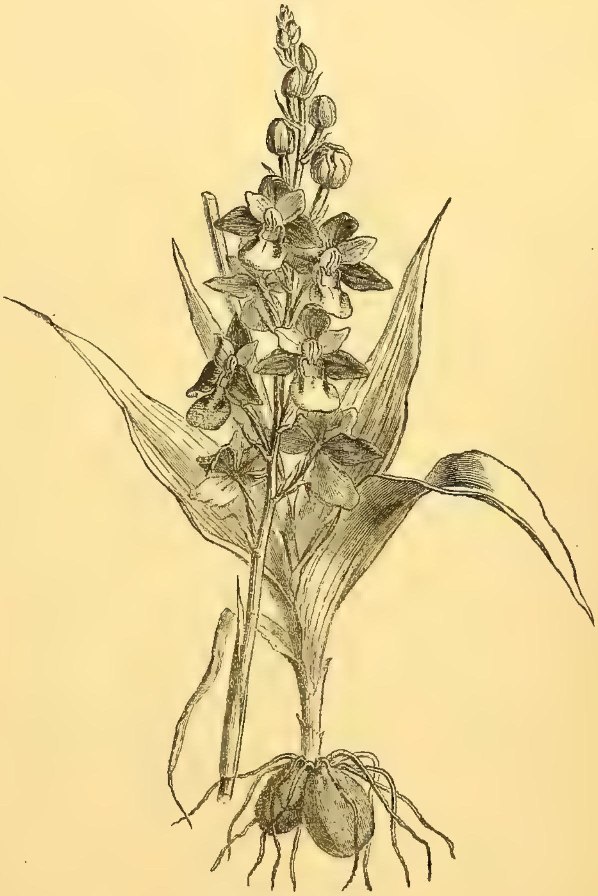
Large Squill.



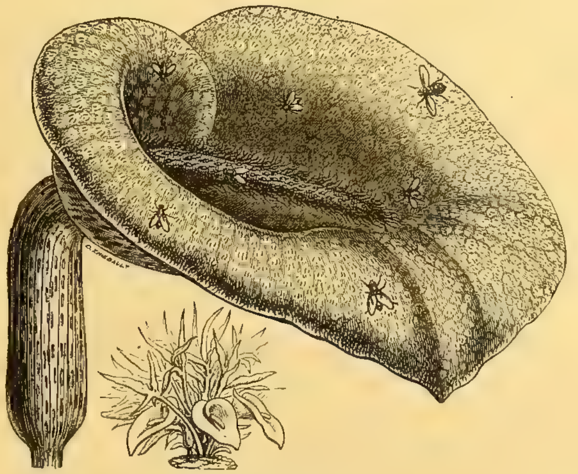
Dianthus.



Flower de Luce.



Terrestrial Orchid.



Dragon's Arum.

GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

Plants from the Mediterranean Region.

Deciduous Trees and Shrubs.

Hibiscus syriacus, 1596
Æsculus Hippocastanum, 1629
Rhus Cotinus, 1656
Genista alba, Portugal Broom, 1771
Spartium junceum, Spanish Broom, 1771
Cercis Siliquastrum, Judas tree, 1596
Prunus communis, Almond
Rosa centifolia, 1596
Cratægus Pyracantha, 1629
Azalea pontica, 1793
Syringa vulgaris, Common Lilac
„ persica, Persian Lilac
Periploca græca
Lycium barbarum
Vitex agnus-castus
Phlomis fruticosus
Daphne pontica
Elæagnus angustifolia
Ficus carica, Fig
Planera Richardi
Morus nigra, Mulberry
Celtis australis, Nettle tree
Platanus orientalis, Plane, 1548
Castanea vesca, Sweet Chestnut
Ostrya vulgaris, Hop Hornbeam, 1724
Alnus cordifolia, Neapolitan Alder

Herbaceous Plants.

Anemone coronaria, 1596
„ fulgens, 1597
(Species from which the florists' varieties have descended.)
Ranunculus asiaticus, 1596
„ africanus
(Species from which the florists' varieties have descended.)
Pæonia officinalis, Peony
Nigella damascena, Love-in-a-Mist
Delphinium (various), Larkspur
Papaver orientale, Perennial Poppy
„ somniferum, Opium Poppy
Malcolmia maritima, Virginian Stock, 1713
Matthiola annua, Ten-week Stock
„ incana, Brompton Stock
Erysimum Peroffskianum
Iberis (various species), Candytuft
Reseda odorata, Mignonette, 1752
Dianthus (various species), Pink, &c.
Saponaria ocymoides
„ calabrica
Lychnis coronaria, 1596
„ chalcedonica, Scarlet Lychnis, 1596
Althæa rosea, Hollyhock
Linum grandiflorum, Crimson Flax
Geranium armenum
„ ibericum
Lupinus (various species), Annual Lupins
Lathyrus odoratus, Sweet Pea, 1700
Ferula communis
Calendula officinalis, Common Marigold
Convolvulus tricolor
Acanthus, various species
Nepeta Mussini
Anagallis Monelli
Iris, various species
Crocus „ „
Narcissus „ „
Tulipa „ „
Pancratium maritimum
„ illyricum
Fritillaria imperialis, Crown Imperial, 1596
Lilium candidum, &c., white and other Lilies
Scilla (various species), Squill
Muscari „ „ Grape Hyacinth
Hyacinthus orientalis, Hyacinth

Kitchen Garden Plants.

Allium Cepa, Onion
Coriandrum sativum, Coriander
Cynara Scolymus, Artichoke
„ cardunculus, Cardoon
Faba vulgaris, Bean
Glycyrrhiza glabra, Licquorice
Hyssopus officinalis, Hyssop
Melissa officinalis, Balm
Petroselinum sativum, Parsley
Pisum sativum, Pea
Ruta graveolens, Rue
Salvia officinalis, Sage

W. B. Hemsley.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Two Useful Ferns.—For decorative purposes Adiantum Flemingi and A. concinnum lætum will be found among the most useful. They require a little more heat than A. cuneatum, but their fronds, either on the plant, or in a cut state, are more elegant, and their culture for market purpose is becoming rapidly increased in consequence.—S.

Richardia maculata.—This variegated form of the well-known Arum Lily is now held in as high estimation for market purposes as the green-loaved kind. Its flowers, though much smaller, are very useful, whilst the plant, when out of flower, is equal in appearance to some of the Dieffenbachias, which are not so easily grown.—S.

Phyllanthus nivosus.—Few plants are more pleasing during the dull months of winter than this. When well grown, it assumes a bushy habit; each shoot terminates with pure white or blotched leaves, thus forming a striking contrast with the deep green of the under foliage.—S.

Ficus Parcelli.—This is useful for associating with Palms, or similar plants in a moderately warm house. If well grown, its leaves attain a large size, their lively white and green blotches are very striking. It is employed for room decoration by the London florists on account of its fine appearance by gaslight.—S.

Lily of the Valley Forced Early.—At the Aigburth Nurseries of Messrs. Kerr & Son, I saw, on the 27th ult, good examples of early-forced Lily of the Valley. They consisted of single crowns imported from Belgium or Holland, potted thickly in 6-in. pots, plunged in a hot-bed in a stove, and covered about 1 in. deep with cocoa-nut fibre refuse. This covering keeps the crowns in an even and regular state, both as to moisture and temperature, and induces an even, regular growth. If it should happen that they start away irregularly, they are taken out and re-potted, the early ones being separated from the late ones. In this way capital pots of Lilies are obtained very early in the season. E. Hobday.

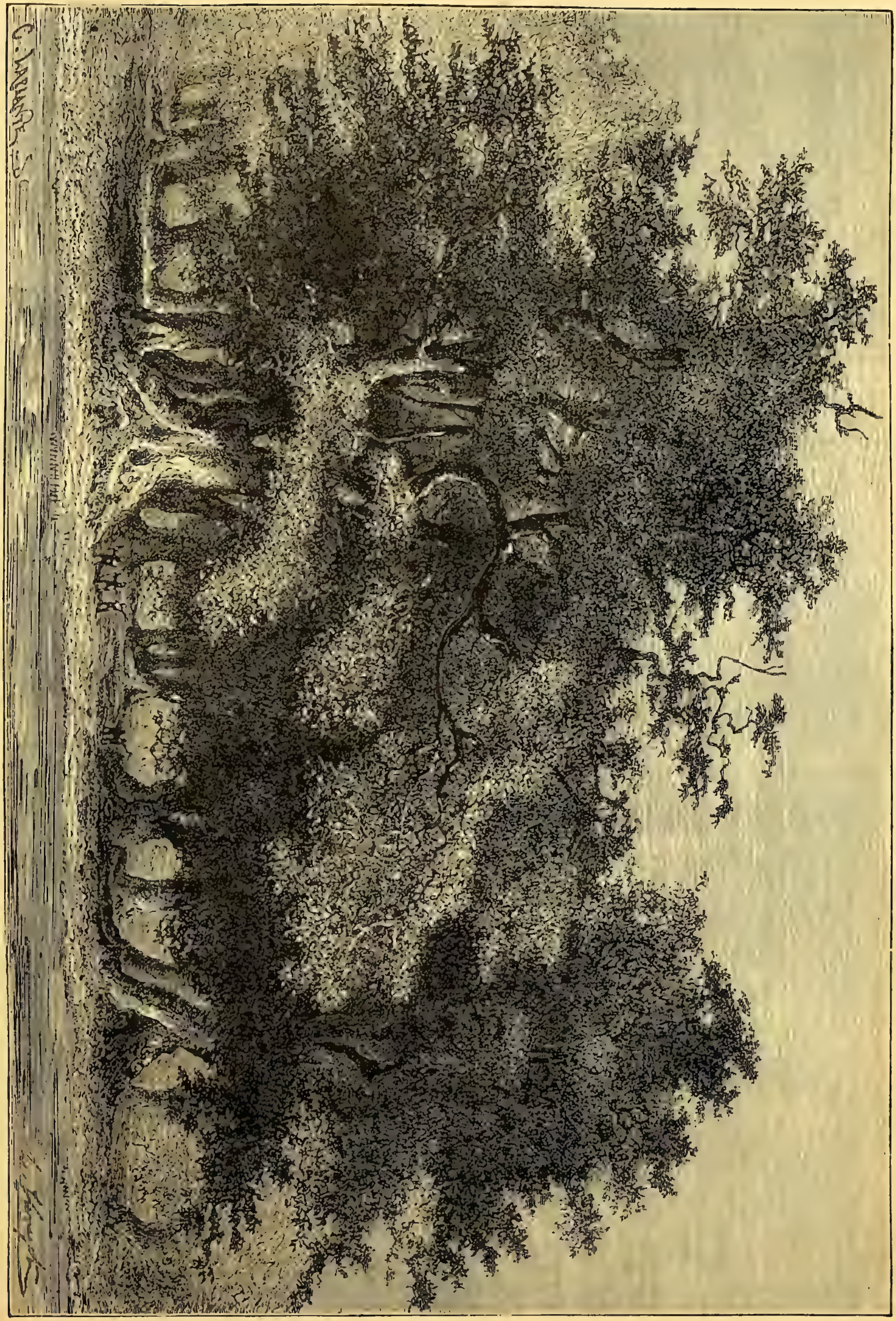
ROSES.

THEIR PROPAGATION AND CULTURE.

Seedling Brier Stocks.—To lovers of Roses who delight in working or propagating their own plants, the present season will be a busy one; for, not only is it the right time to start in earnest with such matters, but there are stocks to be thought of on which to bud next summer, besides Manetti cuttings to be made and put in for the same purpose, and also for grafting during the following winter. For standards, nothing yet supersedes the Brier. The finest and most vigorous plants I ever saw were some growing on Briers that had been raised from seed, instead of being grubbed out of the hedgerows in the ordinary way. The wonder is, considering how the country has been ransacked for stocks and how scarce they had become, that no one thought of, or at least put in practice, the natural mode of raising them from seed, till Mr. Prince, of Oxford, did so, and surprised Rosarians with his fine blooms. That seedling stocks are far superior to wildlings there cannot be a doubt, as the former, being raised in good soil, never receives a check, and becomes more fibrous-rooted; whereas, the latter have to struggle on under difficulties, and get nearly choked by the coarser vegetation around them. The hips being now ripe, should be gathered at once and sown in rows in sandy soil, in any open, sunny spot that may be available for the purpose; for the first season, all the attention which they will require is keeping them free from weeds, and seeing that mice or birds do not molest them, which, just as they are germinating, they are apt to do. There is a great difference even amongst common Briers as regards sorts and their suitability for Rose stocks; and in gathering the hips this should be borne in mind, and only the best chosen, the distinguishing characteristics of which are their clear, straight growth, and smooth grey-looking bark, almost, or entirely, free from spines about the lower portions of the stems. Such as these are always free, vigorous, and healthy, and well adapted to produce flowers of great size and substance, such as exhibitors delight in, as it is only these that have any chance now at shows, so strong has the competition become both among amateurs and growers for sale. As regards seedling Briers, the point is to entice them to make straight, upright rods as fast as possible; and the best way of doing this is to mulch with manure along each side of the row, and by removing the side shoots, to prevent them making any lateral growth till they get up to the height required for budding.

Stocks from Cuttings.—Being short of stocks last year, it occurred to me to try cuttings, which I did, and found them to succeed beyond my expectations; I would therefore advise others who may experience the same difficulty in getting stocks to do the same, as, if put in now, they will be ready to work next July, and will make very fine dwarfs or quarter-standards, according to the height at which they may be budded. Firm, ripe wood is necessary for forming the cuttings, which should be made 6 in. or 9 in. long, and be put quite into the ground, so as only just to leave the tip out, as then they do not shrivel and are sure to strike root. Manetti cuttings should be made in the same way, and be treated in like manner; but there is one thing to be observed with regard to both of them, and that is to cut out all buds except the one at the top, for, if left, they are a lot of trouble after, as they form others round their base that are not readily got rid of. By selecting ripe wood, and putting in Manetti now in the way just indicated, scarcely one in a hundred will fail; but if not well earthed up, a large percentage will do so, as the air and weather act in such a manner as to dry all the sap out of them if exposed to their influence.

Hedge Brier Stocks.—In the case of Briers that have to be collected from woods and hedgerows, no time should be lost in getting the quantity required, as much of the success of next summer's budding depends on whether the stocks are thoroughly established; and, unless planted early, they cannot be had in that very desirable state. If expected to do really well, the ground where they are to be grown should at least be double dug, and if trenched, all the better, as then they will have plenty of root-room, and be able to ramify freely, which



GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS; TREES OF THE MEDITERRANEAN REGION: THE EASTERN PLANE (PLATANUS ORIENTALIS).

will render them comparatively independent of rain or artificial assistance during the summer. To afford room for budding, the rows should be 3 ft. apart, and the Briers 1 ft. asunder in the rows, a space which admits of any one passing between, and enables them to carry on the work in a convenient and comfortable manner. A thick mulching of manure spread over the ground will keep frost out, and enrich it, besides acting most beneficially in encouraging root formation by the way in which it intercepts evaporation, and maintains a uniform degree of heat in the soil.

Transplanting Roses.—Not only is the present season the most favourable for collecting stocks, sowing seed, grafting, putting in cuttings, &c., but it is also the best for re-arranging and transplanting any Roses that may require it, or to get fresh ones from a distance; besides which, heavy top-dressings of manure among beds should not be forgotten, nor ample protection for Tea-scented kinds before sharp weather sets in, and catches them in the unprepared state they now are from having made such a late growth owing to the exceeding mildness of the autumn. For Perpetuals, as a winter dressing, there is nothing to equal good farm-yard manure that has been laid up and well rotted; and the same may be said as regards Teas, but with these latter, some littery material, such as dry Fern or half rotten leaves, should be placed round their collars in addition, as that is the vital part with them, and where they always suffer most; but with Perpetuals, a simple mulching will carry them safely through any winter, however severe it may be. Having a very light shallow soil to deal with, and which is consequently unsuited to the growth of Roses, I have been trenching in some blue clay rather freely before planting, and the result has been of such a satisfactory nature that I can most strongly recommend its use to any one similarly circumstanced. On lifting some to re-arrange them, I found they had sought out these nodules of clay, and had rooted around and through them in such a manner that they had the appearance of tubers, thus showing how greedily the plants had fed on the moisture and nutritive matter therein contained. In preparing the clay and working it in, the great point is to chop it up small, and mix it regularly with the soil well down below the surface, so that there is little, if any, in the top 6 in. or so, as then it does not get turned out in forking or cleaning the beds. Used in this way, it is surprising the quantity of water it will absorb during the summer, and from the slow manner it parts with the same, when buried away from the air, it affords a rich larder for the roots to which they soon direct their course, and avail themselves of its contents. The best manure for Roses in soils that are not naturally stiff, or such as have to be dealt with in the above manner, is that of a cow or pig, on account of being of a cooler nature than horse manure, the litter of which suits well as a mulching or for ground that is close and retentive.

Grafting Roses.—Where an increase of stock is desired, it may now be obtained in two ways, the most rapid of which is by grafting on stocks or pieces of the large roots of the Manetti, Dog Rose, or, indeed, any of the strong-growing garden varieties. The former, however, are the most preferable, and may be bought of almost any nurseryman at about 6s. or 8s. per 100. If these be properly worked and attended to afterwards, scarcely one will fail; but, to insure success, the wood from which the scions are to be formed should be taken off the plants before severe frosts occur; otherwise the inner bark becomes injured, and, instead of callusing, turns black, which prevents the parts uniting. Before grafting, I find the best way is to lay in the Manetti stocks by the heels in some place where they can get a gentle warmth of about 65° or so, to give them a start and get them in advance of the pieces of Rose to be worked on them. A fortnight will be sufficient for this, when they can be taken out and have their tops cut away to within 3 in. of the roots, which will then leave sufficient length of stem to put the grafts on. There are many modes of doing this, but the simplest, and one that is quite effectual for Roses, is to make a slanting cut on both stock and scion about 2 in. in length, just as would be done in forming a quill pen. If these cut portions be then tied tightly together with soft matting, so as to bring them in close contact, they will quickly unite. The wood for the scions should be such as is firm and short-jointed, as that which is soft and pithy is not so suitable, and rarely succeeds well at this season of the year. Grafts containing two or three eyes are the most suitable, and, in preparing them, they should be cut for one to be near the base and the other at the top, the object being to get dwarf plants with the shoots low down to the soil. To economise room, the plants, when worked, may again be laid in by the heels in any hotbed frame, where they can be kept perfectly close and dark, or placed under hand-lights in the same way in the stove; but, wherever put, light and air must be excluded from them till the parts are firmly attached, after which they are fit for potting, an operation that should be carried out with care, as, during the early stages of growth, any rough handling is sure to displace them. To obviate this, it is as well to leave the ties to rot away; and, as they do this before any rapid swelling takes place, there is no fear of them cutting the wood or otherwise causing any injury to either stock or scion. The advantages of grafting now are manifold, as a great number of Roses may be packed away in a small space, and any new varieties increased and got to a size fit for planting out in April or May, whereas, with budding, another year would be lost, as buds could not be put in till next July or August.

Roses from Layers and Cuttings.—In cases where they are desired on their own roots, the most certain way of getting plants is by means of layers, as every branch pegged down and covered with soil is sure to root, provided a slight incision is made at one of the joints, the same as is done in the case of Picotees and Carnations. So treated, they will make good plants within a year, and be fit for removal any time after next October. Cuttings, too, if put in at once, before sharp frost comes to injure the wood, will root freely; although, when propagated in this way, it ought to be done in August or September, when the growth is in a semi-ripe state, as they callus before the autumnal rains and cold weather set in, from the effects of which they are then safe. Being late with this work one winter, and requiring a quantity of plants the following spring for a special purpose, I made a lot of cuttings that had about three buds each, and buried the whole of them thickly in moist sand in pans and boxes, which I set in a Mushroom-house, where, after remaining a couple of months, I think, without a single exception, the whole of them had callused at the cut part both top and bottom, and if allowed to remain where they were, would undoubtedly have rooted at both ends, as they do when only a single eye is put in. Where there are no stocks at hand, and it is desired to make the most of the wood of any scarce or new kind, this way of propagating is the best that can be adopted, as if cut up in 1½ in. pieces, with a bud in the centre, each will form a plant. J. S.

Cheshunt Hybrid and Marechal Niel.—Being in search of a companion Rose to Maréchal Niel for culture under glass, I was advised to try Cheshunt Hybrid, and have found it a very good one for the purpose so far. It is not such a lengthy traveller as the Maréchal, perhaps; but it grows and forces well enough, and is a very handsome Rose, coming in about the same time as the other under greenhouse culture. A number of young plants, which I potted last winter in 10-in. pots, are now 7 ft. or 8 ft. high, and promise well for flower next spring. I prune them but sparingly, and rather prefer to twist the long shoots round a few stakes to cutting them back, and they then break and flower freely. I recommend Cheshunt Hybrid for trial, as, if I remember rightly, several inquiries have been made in The Garden as to a good companion red Rose to Maréchal Niel. By the way, the latter, I find, has a bad habit of dying off just when it gets established that is very provoking; and it is also a risky plant to lift. I have heard of numerous instances of this Rose dying quite unexpectedly, caused apparently by canker at the graft, or where the bark has been wounded in some cases, but in others through no visible cause.—S.

Gloire de Dijon Rose.—This Rose comes nearer to a perpetual bloomer than any other with which I am acquainted. It is growing on several walls here, one of which is well sheltered and faces the south. From this we cut blooms last April, and we have done so every month since up to the present time. Let it be good for exhibition or not, a Rose that will bloom like this, eight months out of twelve, deserves a place in every garden.—Cambrian.

THE KITCHEN GARDEN.

KITCHEN GARDENING MADE EASY.

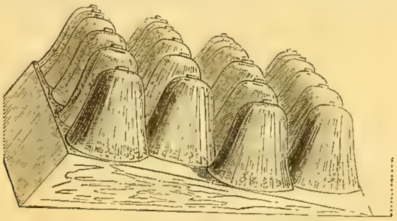
Let me start this week with the Strawberry, the land for which I have deeply trenched, and well manured; and, before planting, it will be well trodden down; my favourite time for planting is the first week in August. I plant at 2½ ft. apart all ways, using plants that have been layered in pots. They therefore feel no check, and they are the produce of forced plants that have been selected, and marked with a X, showing that they bore good potfuls of fruit, so that our stock is always improving. The first year the fruit has only quality to recommend it, the second and last quantity. By the first week in August, as soon as the Strawberries are picked, we cut the runners close off with a spade, rake all the land, set the line, and plant, crowbar fashion, Watt's Excelsior Broccoli. The first year in which this was done here my old wallman says, "Ah! master, that won't do in this land." He however lived to see that it did do—for a finer batch of Broccoli than these Excelsiors were never grown in a garden. When they begin to grow, we keep the hoe or cultivator at work in order to keep down weeds and the surface of the soil open. In April and May we cut Broccoli to our heart's content, and the land in June comes in for Celery. The trenches are taken out 4 ft. apart, and the plants are set in double lines. The usual earthing up is carried on; of course, the soil is all loose, but, unfortunately, the crop stands so long that March sets in before the Celery is cleared away. When off the ground, we take lime and malt dust in equal quantities, and give the land a thorough dressing; again the cultivator is used instead of the spade, and in the first week in April we plant Potatoes, thus growing Strawberries, Broccoli, Celery, and Potatoes without digging the ground. Some may ask, but what kind of crops have you—good or bad? I answer, come and see.

R. Gilbert.

Burghley.

CLOCHES AS PROTECTORS.

One of the most characteristic features of French gardens at this season of the year is the number of cloches which are employed in them. Market gardeners use them extensively during the winter months for covering Lettuces, a purpose for which they are in every way admirably adapted, inasmuch as they can be easily removed, are drip proof, and effectually exclude the searching frosty winds. When thus employed they are generally placed in rows upon raised beds of old rotten manure, with a fall to the south or east, an arrangement which enables them to receive the greatest amount of light, and admits of their being easily covered. It is somewhat singular that Cloches should not be more largely employed in our gardens than they are, as their portability renders them extremely serviceable for many purposes, such as raising seeds or protecting tender, freshly put-out plants in spring. Amateurs would find them very useful for such kinds of work, as well as for purposes of propagation in the summer time.



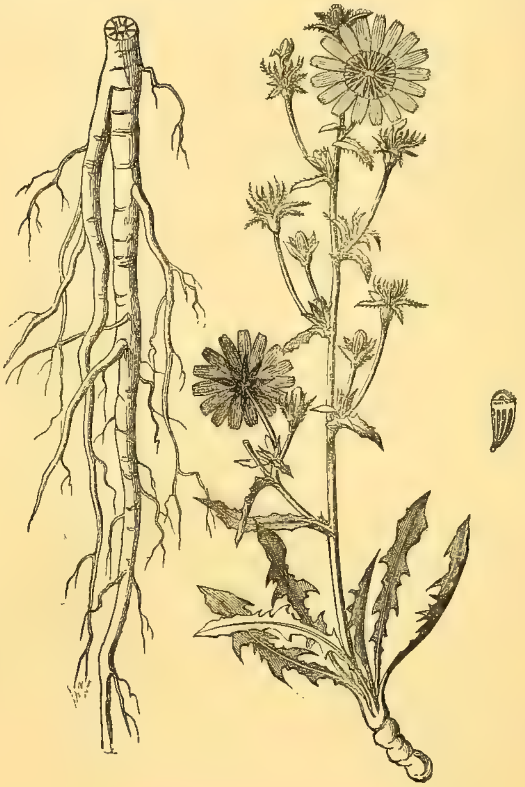
Cloches as Protectors.

J. Cornhill.

Varieties of Tomatoes.—A collection of Tomatoes has been grown for trial purposes in pots under glass this year at Chiswick. The collection was represented by over sixty differently-named varieties, two plants of each being grown. The smallest variety was Red Currant, of about the same size as a Currant; the largest variety was the Trophy, the earliest the Early Gem, and the latest De Lay's, which is of little value. First-class Certificates have been awarded to Little Gem (Bliss), a medium-sized, round, deep-red variety, very free-fruiting, and very early; to New Improved (Vick), a large, smooth, ovate variety of a distinct rosy-crimson colour, free-fruiting; to Vilmorin's Large Red (Vilmorin), a very large, slightly-ribbed variety, and a wonderful cropper; to Trophy, an exceedingly large, nearly smooth red variety, of fine appearance, and late. Hathaway's Excelsior was found to well merit the certificate that was awarded to it some time ago; also Carter's Green Gage, as being by far the best yellow variety. Conqueror, One Hundred Days, and Portsmouth, amongst the new varieties, were greatly admired. Stamfordian, one of the best varieties in cultivation, was, it appears, selected and grown by Mr. Jackson, at Casewick, and was named and sent out at an earlier date under the name of Jackson's Favourite.—"Florist."

CHICORY.

Chicory, or Succory, as it is sometimes called, does not appear to be very extensively cultivated now-a-days, a circumstance which may be accounted for by the fact that it has been supplanted by its near relative, the Endive, which, on account of its finer appearance and milder flavour, has become the greater favourite, both for market and general purposes. The Chicory possesses, however, many meritorious points, which should recommend it to more general attention than it now enjoys. It is of easy culture, is not at all fastidious as to soil, and may, therefore, be grown largely by those who cannot devote much time or attention to the culture of choice salading. Even where Lettuces and Endive are extensively grown, Chicory should find a place, as its addition to the salad bowl imparts a piquancy which cannot well be obtained by any other ingredient. It is largely used and is much esteemed as a winter salad in many parts of France, and, in common with the Dandelion, it there enjoys the reputation of possessing peculiar blood purifying principles. It is often, however, eaten alone, and liked by those accustomed to its use. It should, however, in a general way be mixed with Lettuces or Corn salad.



Chicory—root and flowering top.

J. Cornhill.

Early Peas Under Glass.—No crop is so useful or gives more satisfaction than a dish of early Peas; I therefore echo what Mr. Hobday said concerning them in last week's Garden, with the exception of the varieties recommended. I have tried many kinds in pots, but boxes are best; for a thorough gem give me Little Gem, which enjoys a singular immunity from mildew. I have fifty boxes of it, 3½ ft. long, all up and doing well, and, if all goes as I expect, I shall pick Peas throughout April and May, from successional sowings.—R. Gilbert.

PLATE CIII.

EUCRYPHIA PINNATIFOLIA.

Drawn by H. HYDE.

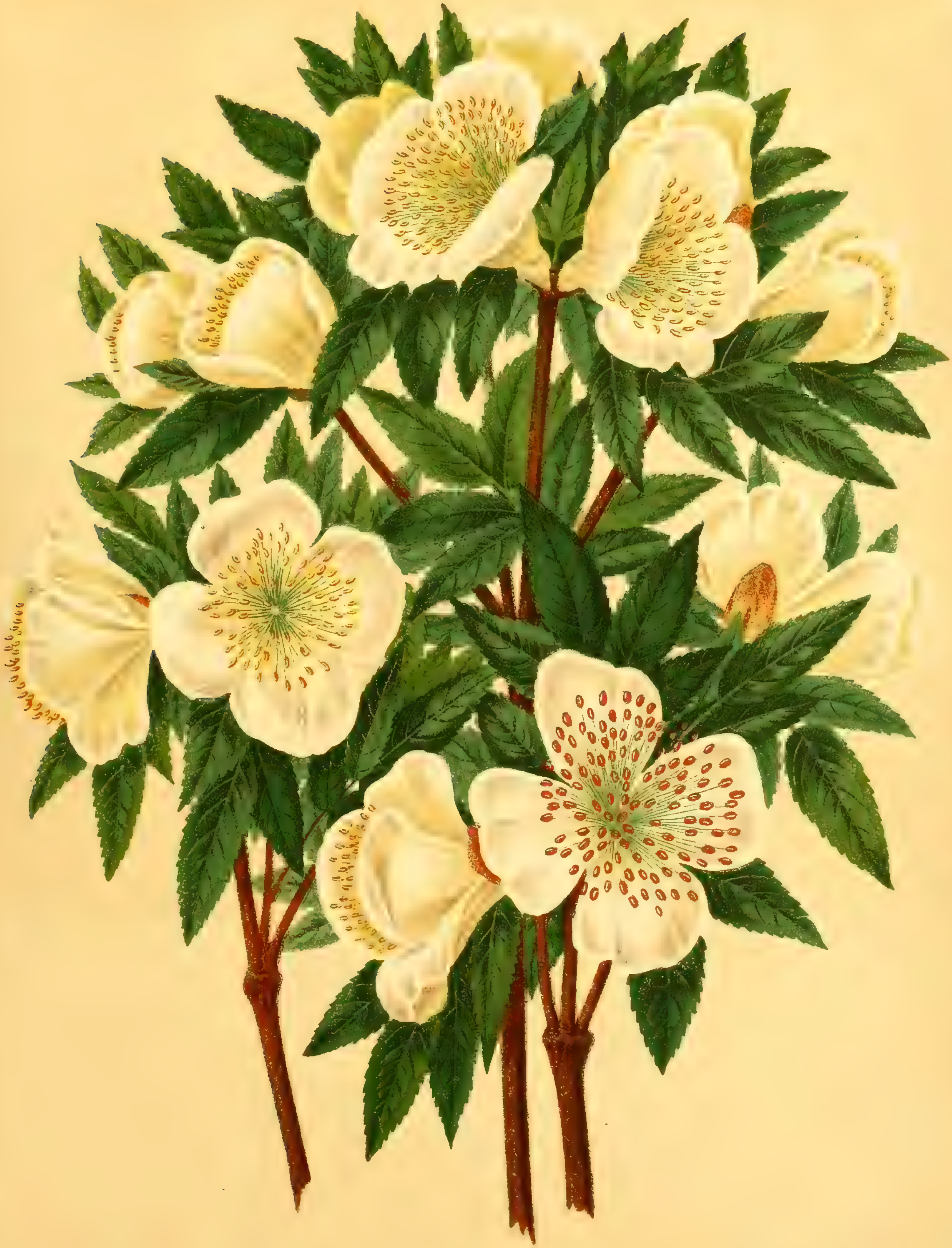
This handsome shrub, recently introduced by Messrs. Veitch, from whose Coombe Wood Nursery we received the specimens figured here, is a native of South Chili, and will doubtless prove hardy in the south-west of England and Ireland; indeed it may be hardy enough to plant anywhere in the south and on the western coast to the north of Scotland. But plants from South America differ so much in constitution, according to the conditions of their native habitats, that it is advisable to advance by experimental steps with a new species. We get a plant from a known latitude, but unless we know at what altitude, or what aspect on the mountain slopes it grows, we have no clue to its relative hardiness. Temperate South America contains many floral treasures suitable at least for the milder parts of the kingdom, and some of them for general planting. This region is peculiarly rich in evergreen shrubs with showy flowers, just as Japan and North America are rich in handsome deciduous flowering shrubs. The number of different species from this region commonly planted is still very small, but most of them possess a special value of their own, and are practically indispensable. Thus the beautiful Berberis Darwini, Pernettya mucronata, and Araucaria imbricata; the hardy Fuchsias, and the showy crimson Geum coccineum. Buddlea globosa is another very distinct and useful shrub from the same part of the world; and who can consider a garden complete without the Lemon-scented Verbena (Aloysia citriodora)? Several species of Escallonia are among the very best shrubs for clothing walls immediately facing and close to the sea in the south and west, and some of the singular, odd-leaved Azaras are also very pretty for the same purpose. A tree which attains a large size, even in Magellan's Straits, an evergreen Beech (Fagus betuloides), as well as its deciduous congener, F. antarctica, should find a place in every exposed garden on the western coast, as they brave the roughest winds with impunity. Adding to the foregoing list only the unrivalled Lapageria rosea, and its variety alba, and what a wealth we have in this small selection! Several more names might be given, all belonging to highly ornamental plants, whether regarded as greenhouse plants for the colder parts of our country, or for the open air in the south-west. The plant before us is one of a small genus of singular geographical distribution. Altogether four species are known, two Chilian and two Australian; and, strange to say, one simple-leaved and one pinnate-leaved species occur in each of these two distant countries. The earliest publication in which we find any information respecting Eucryphia pinnatifolia is Gay's "Flora Chilensis," published in 1845. He says this beautiful little tree (Este hermoso arbolito) grows amongst the rocks at the foot of the Cordilleras in the Province of Concepcion, where, however, he found it only once on the steep rocky shores of the River Biobio. This was in the month of March, when it bore both fruit and flowers. It appears to be an exceedingly rare plant in its native country, both on the evidence of Gay and the fact that few subsequent travellers have collected it. The beauty of this shrub or small tree speaks for itself, and Gay describes the flowers as agreeably fragrant. In general appearance the flowers recall those of the Mock Orange (Philadelphus), but the pinnate leaves at once distinguish it, to say nothing of peculiarities in the floral structure, which it is unnecessary to enter into here. The plant is not yet in commerce, but will, we believe, be sent out next spring. The other Chilian species, E. cordifolia, was introduced about a quarter of a century ago, but it is rarely seen in collections. This also is described by Gay as a beautiful thing in its native country, where it is much commoner than E. pinnatifolia, being abundant in the Island of Chiloe, and on the mainland at Valdivia and Arauca. It has opaque, very thick, oblong leaves, on short stalks, and white flowers, and is of a more dense habit of growth. The Australian species have, I believe, hitherto not been introduced into European gardens, though they are both very ornamental. E. Billardieri, the simple-leaved one, particularly is worthy of attention. It inhabits the mountainous districts of Tasmania, and is probably almost or quite as hardy as its Chilian congeners. It is described as a handsome tree, attaining a very large size in its lower habitats, becoming smaller and bushy as it ascends, and in very much exposed situations. The leaves are oblong, thick, and glossy, like those of Buxus balearica, and vary in the different forms from 2 in. to ½ in. in length, and are glaucous or whitish on the under surface. The flowers are white and very showy, the broad petals often 1 in. in diameter. E. Moorei has pinnate leaves, with nine to eleven leaflets, and rather smaller white flowers. It is a native of New South Wales, and less hardy than any of the others. The fruit or seed-vessel of this genus is a hard, woody capsule, and the position of the genus in the natural system debatable, it having been variously assigned to the Hypericineæ, Rosaceæ, and Cunoniaceæ, and considered as the type of a distinct Order.

W. B. Hemsley.

Rocky Streamlet in Garden, with tufts of Cotoneaster, Yucca filamentosa, Iris, &c.

The Compass Plant.—It has long been known that the western plant growing on the open prairies of America, and known as the Silphium laciniatum, has the property of turning many of its leaves nearly north and south, and hence the name "compass plant." It is also called "rosin-weed," from its copious resinous juice. In order to determine to what extent this alleged polarity exists, Mr. C. E. Bessey, of Ames, Iowa, has, says the "Scientific American," made a large number of accurate observations, which he reports in a late number of the "American Naturalist." Out of ninty-three observations, fifty-four were found which pointed more or less east or north, and thirty-nine more or less west. Of the fifty-four which pointed eastwardly, eighteen were within 5° of north, eight more within 10°, seven more within 15°, five more within 20°, and three more within 25°, leaving only fourteen leaves which diverged more than 25° from due north. Of the thirty-nine which pointed to the west of north, nine were within 5°, five more within 10°, three more with 15°, seven more within 25°, and seven more within 35°, leaving only eight which diverged more than 35° from due north. Its polarity is, therefore, fully established.

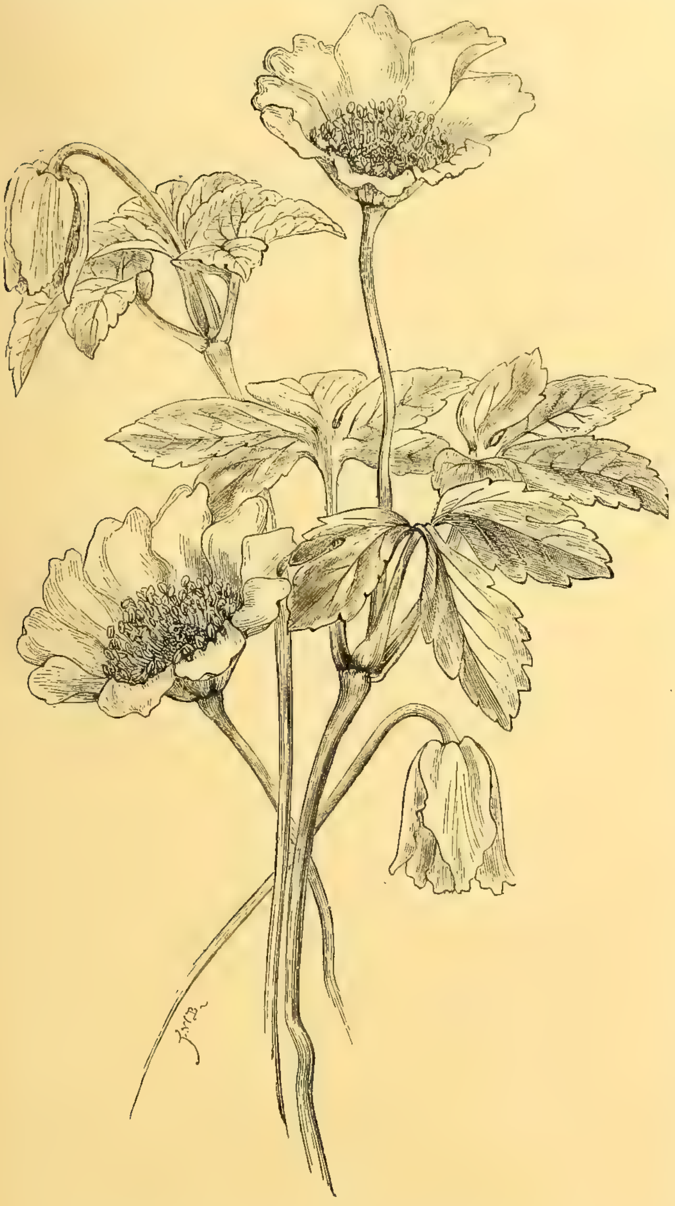
Supplement to *The Garden* Office, 37 Southampton Street, Covent Garden, London



THE FLOWER GARDEN.

ANEMONE "ROBINSONIANA."

Of a numerous and very beautiful family, this is, to my mind, the undoubted queen. There is a gorgeous splendour about A. fulgens and Pavonina, and a dazzling beauty in A. stellata and coronaria; there is much delicate grace about A. bracteata, trifoliata, apennina, blanda, sulphurea, alpina, nemorosa, and narcissiflora; we all admire the purple and silk in which A. Pulsatilla and vernalis love to clothe themselves, and seldom tire of gazing at the golden sheen of A. palmata and ranunculoides; A. japonica and vitifolia, and their varieties and hybrids, have much pleasant autumnal brightness; but, to my mind, all fade before the simple and innocent loveliness of A. "Robinsoniana," or, as it is perhaps more commonly called, A. nemorosa cœrulea. Botanists seem to agree that, though in many respects very distinct, it is a variety of the common British Wood Anemone, A. nemerosa. It is a much dwarfer plant, blooms later, and both leaves and flowers possess more strength and substance; but its distinguishing characteristic is the pure, pale, cœrulean blue of the inner surface of its petals. I know of nothing more exquisitely lovely than a fully-expanded patch of this beautiful flower on a bright spring morning. It is a rare British wild plant; I know of its occurrence in Norfolk and Essex, and I believe it has also been found in Kent and Sussex. It has long been cultivated in the Oxford Botanic Garden and in a few other choice collections, but was practically unknown to the general public till a few years ago, when Mr. Robinson found it growing wild, and, struck with its marvellous beauty, so frequently spoke of its charms, that it became a general favourite, and, in compliment to its champion, took the name of A. "Robinsoniana."



Anemone "Robinsoniana."

H. Harpur Crewe.

Drayton-Beauchamp Rectory, Tring.

BEGONIA FRŒBELI AND OCTOPETALA ROSEA (?).

Herr Otto Frœbel, of Zurich, writes to me to take exception to the above first-named Begonia, recently figured in The Garden, being described as a winter-flowering variety, such as my continued experience of it has undoubtedly proved it to be; and has requested me to inform the readers of The Garden that with him at Zurich (planted out in quantity in beds in the open air) it is in full blossom in the month of June, and that hence arose the assertion that this plant might be considered as a formidable rival to the old scarlet Zonal Pelargonium. It may be that the Swiss sun, being much more intense than anything we can hope for (at least in ordinary summers) in this country, has the effect of bringing the plant into bloom thus early, but certain it is that, when planted out by me in the sunniest part of my garden, it grew indeed, and sent up many beautiful velvety Gesnera-like leaves, but did not open a flower till towards the middle or end of October, after it had been lifted into a pot for the greenhouse, and, continuing in flower till the middle of January—fully earned in my opinion the name (to which Mr. Frœbel objects) of winter-flowering Begonia. It is now in great beauty in my greenhouse, and its brilliant colour is an immense acquisition at this dull and almost flowerless period of the year. Herr Frœbel also informs me that the name of the other variety of Begonia at the head of this paragraph with a query affixed to it is only temporary, as he considers this plant quite distinct from octopetala, though kindred or allied to it. It also comes from quite a different part of Peru, being indigenous to the extreme north of that country, whereas octopetala comes from the southern district—more than 100 leagues distant. He has merely given the plant the provisional name of octopetala rosea till the correct specific name is ascertained by some botanist learned as regards the Begonia family. This, Herr Frœbel allows, is distinctly altogether a winter-blooming variety, as its bloom-head is only now showing itself above ground, and if it has to grow to the height of the tall foliage, it will be some fortnight or three weeks yet before it can be expected to show what it is like. W. E. G.

CHRISTMAS ROSES OUT-OF-DOORS AND UNDER COVER.

Of all hardy plants, this is certainly one of the most serviceable, affording as it does an abundant supply of flowers for cutting, at a time when they are generally much in request, and not over plentiful. Not only is it of great use for the above purpose, but it is equally valuable for pots to use in the greenhouse or window recesses in rooms, for the latter of which positions it forms a charming ornament of great powers of endurance, owing to the thick texture of its leaves and the immense substance of its fine waxy-looking blooms; the stems, too, that support these, being large and porous, take up water freely, in which, when placed with flowers even in the bud state, they absorb sufficient to induce them to expand almost as well as if left on the plant. Although generally supposed to be slow to increase, I have not found that to be the case with H. niger maximus, which is by far the finest and best of all the species, as, after obtaining three clumps last autumn, I was enabled, by shaking them clear of all soil and carefully separating each crown, to increase them to twenty-five, only one of which failed to grow. The situation I chose to plant them in is a narrow border, at the sunny end of a greenhouse, a position that appears to suit them admirably, as they have all made fine crowns, and are producing a profusion of blooms. Here they get shelter, and can easily be protected by leaning some old lights over them on the approach of bad weather. So favoured, the flowers come with much greater purity of colour, and free from that disfigurement to the edges of the petals in the way they are generally affected when exposed to wind and wet, and allowed to take their chance. To grow them well and strong, they require a light, deep, rich soil, and if of a peaty nature, all the better, as they delight in decomposed vegetable matter; and, if peat is not easily to be had, plenty of leaf-mould should be worked in instead, with a little road-scrapings or sharp sand, to keep the whole open and porous. In ground prepared in this way, and with occasional waterings during the summer, they will luxuriate and make plenty of foliage, on the free and full development of which much of the success in flowering these most useful plants depends. For pot work, it is best to take them up about the middle of October, and to put them under cover in cold frames, where they can be kept with plenty of air till they get well into bloom. It should be borne in mind that, hardy as they are, they are very susceptible of injury after being housed some time, as the leaves do not acquire that degree of firmness and leathery texture so characteristic of them when fully exposed to the weather. This being the case, any that are used as pot plants should not be turned out in open quarters as soon as their beauty is over, but be kept in some cool, light place till all danger of severe frosts is over. —S. W., in "Gardeners' Chronicle."

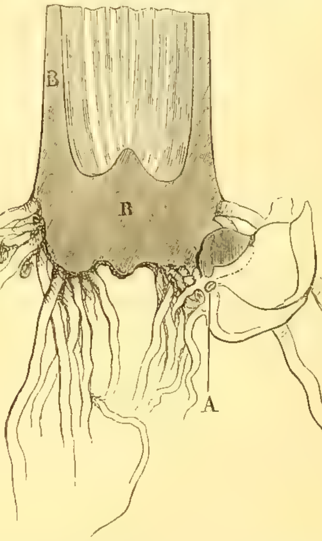
YELLOW PICOTEES.

The Yellow Picotees—"Golden Gems" as they are termed by some of the more enthusiastic of the old florists—are very rarely met with now, still they are grown, for in Mr. Turner's last spring catalogue he enumerates not less than twenty varieties. They must be in demand, and it is a fair inference that they are cultivated by somebody who has a fancy for these beautiful and distinct flowers. There is no class assigned to them in the annual exhibition at Manchester, of the National Carnation and Picotee Society, and they are not to be met with in any of the stands, the pure white-ground flowers being staged in preference; and also for this reason that they are more easily grown. There lies the secret. The yellow Picotees are not a robust class, capable of enduring, without protection, the vicissitudes of our climate; but they are a delicate race, extremely difficult of cultivation, and frequently rendered more so by unskilful treatment. In order to succeed with this lovely flower—for the yellow ground, in contrast with the richly coloured edge of the petal, makes it a charming floral object—it must be made a speciality, and have constant attention. The late Mr. W. R. Bragg, florist, of Slough, used to grow the yellow Picotee remarkably well, and raised some good varieties; Bragg's Beauty being still one of the best in cultivation. To grow Yellow Picotees with anything like success, a dry situation must be given to the frame, and air given on all favourable occasions; but the usually humid atmosphere prevalent during the months of November and December must be guarded against, and especially sudden and severe frost. The yellow Picotee has at best a delicate constitution, and precautions are necessary; but what a reward it is to the enthusiastic florist, after having safely guarded his plants through the shoals and quicksands of the trying autumn and winter months, to be favoured with fine blooms after so much care!

Two objections have been urged against the yellow Picotees from the strict florists' point of view—one a material imperfection, a notched or jagged petal; and the other the uncertain style of marking in the edge. Both of these can be improved by time, if the work of improvement be gone on with patiently and thoroughly; but it will take time to tone down these defects. Let it be remembered that the yellow Picotees are a restricted class, containing but few varieties, and that the advance in the direction of improvement is necessarily much slower than in the case of the much larger section of white-ground flowers. One of the foremost florists of the past generation—the late Rev. George Jeans—once laid down a course of action by which he thought the class of yellow Picotees might be materially improved, and his legacy remains to the present day, for the present or a coming generation to put into practice. A first-class yellow Picotee should have a clear yellow ground, as deep and fine in colour as possible, a rounded edge to the petal, and a regular and even margin or beading of rose. The serrated marking and irregular edge have to be got rid off before this can come, and the motley assemblage of colours, which often obscure and disfigure the edge, withdrawn and replaced by clear rose. This has been only partly brought about, and the completion of the work lies yet before the present race of florists. The following plan was laid down by the Rev. Geo. Jeans in one of the earlier volumes of the "Florist."—1. By saving seeds from yellow selfs hybridised with the yellow Picotee; and, for experiment's sake, reversing the parents when it will not have a tendency to reduce colour. 2. By saving seed from two fertilised yellow Picotees. 3. By saving seed from dark-coloured yellow selfs hybridised with the highest coloured white ground Picotees of the several classes of red, purple, and rose, using the pollen from those flowers which are particularly distinguished by a steady style of marking, and not intermixing light and heavy edges. 4. By seed from yellow Picotees hybridised as in the previous recommendation. An important caution to raisers of seedlings is here necessary. The young plants always take on a vigorous growth in a young state and during the summer; but, as it wanes, the inherent delicacy of constitution in the yellow Picotee begins to assert itself. Then it is that great care is necessary, and it is best to lift the plants, pot them, and treat them during the winter as above recommended. Who will enter upon this work? In these days of floricultural enterprise, there should not be wanting some to devote themselves to so interesting a task. D.

THE GROWTH OF LILY BULBS.

"Dunedin's" startling assertion that Lily bulbs are of annual growth, or at any rate are not true perennials, has excited great interest in the minds of many Lily growers, and has met with more than one opponent. We must remember that for forty years "Dunedin" has been studying Lilies; there are few growers who have his experience; but I am surprised that no one has confirmed his idea: for my own part I feel sure he is right. Suppose we plant in the autumn a Lily bulb; after it flowers, the bulb has done its duty, and either rots and disappears in the soil, or else passes the substance and tissue of its scales into one or more newer bulbs (formed on the basis of the corm) that were in process of formation while the flower-stalk was being thrown up. Whether it can therefore be said to be an annual growth or not is not clear to me; but I can well believe that it is annual, biennial, or triennial. Manifestly there must be a beginning to these new bulbs. "Dunedin's" doctrine of the seed bud of the new growth being formed close to the flower stem, near the centre of the bulb on the basis of the corm, I also hold to. In short, I believe Lily bulbs are in perpetual growth, never dormant, and therefore never require absolute rest, though, likely enough, they do not want as much water in the autumn as during their flowering period. I take it the corm of the bulb is the nurse to the future bulbs; the scales of the flowering bulbs are pushed aside by the newer growth in the interior. In the summer, this newer growth is sending up its flower-stems, and is in turn, as it becomes the old bulb, pushed aside by another growth, so that separate bulbs are formed. I believe the growth of Lilium giganteum to be common to other Lilies. None are true perennials; no part of the bulb, except, perhaps, the corm, is the same after being three years in the ground. Take the case of a large bulb of Lilium speciosum, with scales much separated, and no clean white growth in its heart; this was planted last September, and all the summer showed no signs of growth. In



Base of flowering stem of Lilium giganteum.
A.—Germ of new bulb. B.—Woody stem.

the middle of the bulb, when I took it up this autumn, I found two small young growths touching each other and proceeding from the corm, being part and parcel of it, and not adventitious bulbs clinging to the scales; each new growth was about as big as a Walnut; it had no root at all. By the end of the next spring these two young growths will have entirely filled up the surrounding scales, from which scales, in conjunction with the corm, they derive their nutriment; when these outer scales have done their duty, and have fed with their tissue the new bulbs, they will decay and pass into the earth round the bulb. This can be constantly and continually seen in the case of Lilies of the auratum class newly imported. What vitality there is in them after their journey goes to support the already-formed flower-stem; but, at the same time (if they continue in good health) a new bulb is formed, and, if the bulbs are inspected in the autumn, all the old scales will be found rotten round the new bulb. Whether the germ of this new bulb is a season old or two seasons old, I trust we may learn from more experienced cultivators than myself. Lilies may certainly remain underground without showing any signs of growth aboveground for a whole season; some sorts do this continually—Lilium Browni, for instance, or L. Wallichianum. In the autumn of 1875 I planted, in the open border, a small bulb of Lilium concolor; in the summer of 1876 it flowered well; in the summer of 1877 it made no sign of growth aboveground, so I carefully uncovered the bulb, and found that, though there was no root whatever, an entirely new and much larger bulb had formed, which will probably bloom well next year. I planted last winter the most gigantic bulb I ever saw of Lilium auratum, which the season before had thrown flower-stems 9 ft. high; there was no appearance of fresh growth in it, no white heart or feeling of newness—all seemed separated and parted. A tiny growth an inch high was all that showed this summer; but probably all the summer new growths have been forming in its heart from germs already a season old, feeding on the basis of the corm and on the old scales, and I confidently expect fine stems next season. Regarding the white garden Lilies (L. candidum) being evergreen, for two months after flowering no leaves appear, and the old ones are completely dead long before the new leaves arrive.

Bingham, Notts. FRANK MILES.

White Hoop-Petticoat Narcissus.—Mr. Rawson has shown me two beautiful flowers of this Narcissus, or, as it is sometimes called, Corbularia, one of them as large almost as the yellow Corbularia; and now he sends me another, remarkably distinct in the length of the tube, but not so large as the previous one in the trumpet. Mr. Rawson has been more successful with this bulb than any one else. He informs me that he grows it in pots; when the foliage dies he places the pots on their sides, and there lets them remain till the autumn, without moisture. In the autumn he fresh-surfaces the pots, and then places the pots in a little water, and gives a gentle bottom heat till growth is induced; very soon they throw up their flowers, giving a succession. At the present time I have a wonderful display of foliage of these, produced by roots received during the summer from Algiers. I have never before been so successful, and anticipate that the great difficulty hitherto experienced with this bulb is now overcome.—P. BARR.

Double Pyrethrums.—Great progress has been made with these, and Messrs. Kelway & Son, of Southport, who have lately entered the field as raisers of novelties, own the following sorts, remarkable for their size, fullness, symmetry, and striking hues of colour:—Amethyst, pink, flushed with violet-blue, large, and striking in appearance; Achilles, rosy-pink, large, and very fine: Captain Boyton, cherry-red, a fine dash of colour, large and full; Captain Nares, soft magenta; Ceres, bright pink, deepening to rose on the ray florets, large, and very fine; Cleopatra, pure white, large, and full; Duchess of Edinburgh, pale pink, tinted with violet, and surfaced with silver, very pretty and attractive; Galopin, deep magenta, shaded with maroon; Kreimhilda, pale pink, a pretty hue of colour, large, and full; and Queen Mary, blush, flushed with pink. These Pyrethrums are most effective border flowers.—"Florist."

Omphalodes Luciliæ.—This pretty little plant has been in full flower in my rock garden for these last six weeks. I only got it last spring, and know nothing as to its hardiness or propagation. Will any correspondent of THE GARDEN kindly inform me in reference to these points?—D. Mc C. Mahony, *The Island, Rochestown, Cork.* [It may be increased by seed or division.]

THE FRUIT GARDEN.

TRAINING PEAR TREES.

HAVING read with much interest the remarks in THE GARDEN on the upright system of training (see pp. 393 and 429), I am induced to furnish an account of results obtained from the horizontal system, which will, I think, compare favourably with any mode of training or culture yet practised. The tree which I take as an example is a Glou Morçeau on the Pear stock against a west wall; it covers a space 10 ft. high and 20 ft. wide. Over this space the crop was well distributed, and 460 fair-sized fruits were this season gathered from it, being a fraction over two and a quarter Pears to the square foot, or twenty to the square yard. Mr. John Wills, of Brompton, and Mr. A. F. Barron, of Chiswick, saw the Pear crop on the walls here the first week in August last, and both stated that they had seen nothing like it elsewhere. I allowed the tree in question to carry a heavier crop than usual this year, as pyramids with us this season have been a comparative failure, otherwise our fruits are generally thinned down to a fair but not too heavy a crop, and in that way we get larger size individually. From the Glou Morçeau tree just named, I have gathered fruit of the following dimensions, viz., 12½ in. in circumference the long way, and 11½ in. in girth; weight, 16½ oz. The tree has not been summer pruned, as it made only sufficient growths to keep the nets, for preventing the birds from picking the fruit, well off the wall. I plant my Pear trees on walls as much together as possible on this account, and let the fruit hang as late as I can before it is gathered; the season of ripening is thereby retarded. The branches are all three courses of bricks apart, and every portion of the wall is completely covered. The bark of the main stem, to the base where the tree is grafted, is as smooth and shiny as that of a sapling Oak, showing what a healthy growing state the tree is in, although planted eighteen or nineteen years ago. When trees are carrying such heavy crops, I make it a rule to well mulch and water occasionally. From a young tree of Josephine de Malines, growing by the side of the Glou Morçeau, I have this season gathered 140 fine fruit; this tree is on the Pear stock, and was planted seven or eight years ago. It supplanted one of the same sort on the Quince stock, which did not thrive, and which was therefore removed. From a tree of Winter Nelis, covering a space of 10 ft. by 18 ft., I gathered one season some 900 Pears, but this was cropping much too heavily. I quote it, however, to show what horizontal training and good culture can do. I believe horizontal to be much better than upright training, as the growth throughout the tree is more equalised, whereas the upright system favours a gross overgrowth at the tops of the branches. I have tried upright training and also oblique with Peaches and Nectarines on open walls, but it tends to a strong coarse growth with very little fruit, even in seasons when the other trees trained in the common way have borne good crops of fine fruit. From the tree of Winter Nelis above alluded to, I showed at South Kensington on the 17th November, 1868, six fruit weighing together 2 lb. 11 oz., the average of each being 7 and one-sixth oz. I have often had them, however, upwards of ½ lb. each, which I consider heavy for Winter Nelis. From the same tree I can gather this variety from October until the end of February; this is done by taking some early and placing them in a warm room a few days or a week before they are wanted for table, while others should be left hanging on the tree as late as possible. I consider Winter Nelis to be the best of all winter Pears. By planting young treess in good loam, and growing them strongly, they soon cover the walls; and, by notching the sides deeply to form the horozintal branches, five and six can be grown on each side in one season, and the second year afterwards I get fruit from the whole length of their first years horizontal growth. The branches of the young tree of Josephine de Malines, to which I have referred, extend 8 ft. on an average, and are well set with fruit-bearing spurs of not more than 1½ in. long. I ought perhaps to state that this district is probably much milder as regards climate than many other parts, and that we have a choice of good loam which might be equalled but not surpassed. In pruning, I annually cut many of the spurs that have borne fruit well back to the main branch; they always break freely, and are thereby kept short and close to the wall. We have now a good quantity of well ripened Chaumontels fit for dessert. They were grown on the Quince stock against a south wall. The following sorts of Pears were in season in October, viz., Beurré Superfin, Thompson's, Seckel, and Crassane. We have now Beurré Bosc, B. Diel, B. Bachelier, and Doyenné du Comice. Second rate sorts of dessert Pears I find very useful for culinary purposes, any of them being fit for stewing, &c., although not equal in this respect to such sorts as Catillac and Bellissime d' Hiver. John Garland.

Killerton, Exeter.

VINES AND POTASH.

A correspondent of a contemporary, who hails within 100 miles of the Carse of Stirling, and who, as is well known, has got a "bee in his bonnet" on the subject of manures, has lately been taking somebody to task for mentioning wood ashes from garden rubbish as a manure for Vines. As I happened to say in The Garden of July 21 that I burnt our garden rubbish for such purposes, it is just possible I am the person referred to, and, as it appears from this correspondent's remarks, that grievous mischief might be caused by what I said, I hasten to say, for my own part, and for the peace of mind of my brother Grape-growers who may have been led to adopt the practice, that I have applied the wood-ashes from general garden rubbish—with which, also, as much clay as possible is always burnt—to our Vine borders for years without any more disastrous consequences than always having plenty of good Grapes for nearly twelve months in the year, and receiving not a few prizes at different times, and if I, or any of your readers, have erred by thus using such garden rubbish as cannot be used any other way conveniently, we have erred in good company, and under good advice, to wit—Dr. Lindley, Thompson, and others. The correspondent alluded to is actuated, he tells us, by a desire to guide our actions according to method, instead of in a vague way, for which I trust everybody is duly grateful; but, judging from the schooling to which he has himself had to submit in another contemporary, I should say his guidance is not of the safest description. It must be admitted that he has grown a crop of Melons which averaged some 2 lb. each, a feat which the grower himself has fully set forth in an article of closely-printed matter, about 1½ yards in length; but in future we trust he will give us more of his gardening and less of his chemistry, for surely he ought to produce something very sensational indeed, seeing he proceeds so methodically and so scientifically to work, and has got the chemistry of the garden at his fingers' ends. His instructions on Grape culture, however, savour just a trifle of the philosopher who was going to extract sunbeams out of Cucumbers. He may rest assured that gardeners are quite equal to the task of growing Grapes, without troubling themselves to analyse the contents of their Vine borders, or to serve up food to their Vines as a doctor does to a sick patient. To do our friend in the north justice, however, it appears he has so far succeeded in his mission as to be able to tabulate exactly the different elements that go to compose the structure of plants—fruit, flowers, and foliage—and he is probably now just casting about him for a way to stick them together, and make us independent of cultural processes altogether. I purpose paying our friend in the north a visit at the earliest opportunity; afterwards, I shall have much pleasure in publishing the astonishing results of his "methodical" practice in The Garden. J. S. W.

NOVEMBER AND DECEMBER PEARS.

In continuation of my notes and illustrations of Pears, the following must be placed amongst the best that ripen during the months of November and December. Beurré Six (fig. 1) is a Pear of large size and handsome shape, with a smooth skin of a light green colour, somewhat after the style of Glou Morçeau; and, like that variety, changing to pale yellow when quite ripe. The flesh is white, and of delicious flavour, being slightly aromatic, and the fruit will keep for a month after being fully ripe. The tree is of good habit, and a free grower, and is well worthy of extensive culture. Van Mons Léon Leclerc (fig. 2) is a well known Pear, and must have a first position either for dessert, market purposes, or for exhibition; it is also more hardy and free bearing than many other favourite kinds, for, during even this bad season, the crop with us is an average one. The flesh is sweet, buttery, and melting, sometimes, though very rarely, slightly gritty. It deserves to be grown on a wall, but does well in the form of a bush. Its fruit generally ripens about the middle of November, and keeps good about three weeks. Bergamotte Crassane (fig. 3) is a small but delicious Pear, valued by some for its highly perfumed flesh. In this respect, it partakes to some extent of th character of Seckel, only that the flesh is more juicy than that of that variety. It requires a warm situation, and makes a fine pyramid. The tree, being a free-grower, frequent stopping is necessary, in order to induce the formation of fruit buds. It is most fruitful on the Quince stock. Beurré Diel (fig. 4) is one of the largest of all Pears, often weighing 1 lb. or more. I recently saw a fruit of it which weighed 22 ounces. It is also excellent in quality, a wonderful free bearer, and a Pear which deserves a wall, a position in which it grows very large; if grown as standards or bushes, it rarely exceeds medium size, and is always gritty. It ripens in November, and continues on into January, the long season in which it is in use being one of its chief merits. Fondante de Noel (fig. 5), although comparatively little known, is in all respects most excellent, being of large size, and first quality. It has a pale yellow and russty skin, and the fruit is uneven in outline, and not of the handsomest shape. It is a good keeper, its season being from the beginning of December to the end of January; Dr. Trousseau (fig. 6) is a very handsome-looking fruit, with a rough dark green skin, tinged with red on the side next the sun. Its flesh is rich, sugary, and highly aromatic. A most excellent Pear, and one well suited for cordon or espalier training. Triomphe de Jodoigne (fig. 7) is a large, fine looking fruit, but here it gets into bad repute on account of its deception, rotting at the core before it is fit for table. This fault is the more to be regretted, as it is a most profuse bearer in any situation, and under any mode of training. Local circumstances apparently are to blame for this fault, as I often meet it elsewhere in fine condition. Beurré Delfosse (fig. 8) is a good looking moderate-sized fruit, of but second rate quality; its greatest merits being its free-bearing properties, and the comparatively long time during which it remains fit for use. It is a fine stewing Pear. Nouvelle Fulvie (fig. 9) is one of the finest late Pears in cultivation. It ripens generally about Christmas, and continues in use till well into February. Its skin is green and russet, with red on the side next the sun; the fruit is uneven in outline, but by no means ugly, and its flavour is juicy, rich, and fragrant; altogether a most desirable kind to grow. Beurré Rance (fig. 10), is a well known late Pear, being especially good for stewing, and in some soils and districts

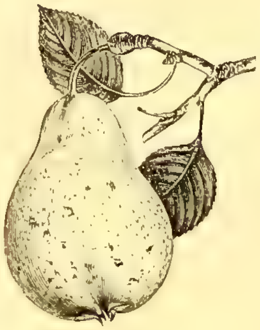


Fig. 1.—Beurré Six.

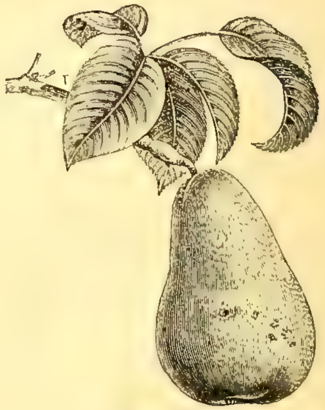


Fig. 2.—Van Mons Léon Leclerc.

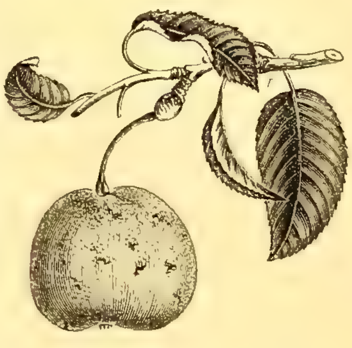


Fig. 3.—Bergamotte Crassane.

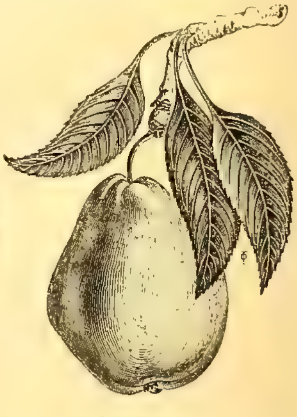


Fig. 4.—Beurré Diel.

equally good for dessert; but southward it is only valued for stewing, as it rarely comes up to the dessert standard. In the south it is generally best flavoured when grown on bushes; if grown on a wall, it is mealy and gritty, and only fit for stewing or baking. It is a sure and free bearer, and as it seldon ripens till Christmas or February, it is a valuable late Pear. The tree is very hardy, and does well either on the Quince or Pear stock. Other very good kinds of December Pears are Comte de Flandre, Napoleon, Passe Colmar, Chaumontel, and Beurré de Aremberg. W. W. H.

FIELD CULTURE OF HARDY FRUIT TREES.

(Concluded from p. 500.)

Parasitic Plants.—There are certain vegetable enemies of fruit trees which require periodical removal, as they live at the expense of the sap of the trees. Amongst the most hurtful are the Mistletoe and different kinds of Moss. The Mistletoe (Viscum album) is a parasite that grows by preference on Apple trees, but is also found on certain forest and ornamental trees. It insinuates its roots between the bark and the wood, forming large bushy tufts, which drain the tree of its natural nourishment, and only dies when the portions of the branches on which it grows are decayed. As soon as it makes its appearance it should be destroyed by removing the bark beneath which it has insinuated its roots. The seeds are surrounded by a viscous substance, and are generally carried from one tree to another by birds. The appearance of Moss upon otherwise healthy-looking trees is a sure and certain sign that there is something wrong with the roots, and shows that the soil is either badly drained, or is of poor quality. In old trees, the decaying portions of the bark give rise to the growth of this parasite in accordance with the law of Nature, according to which everything that ceases to live becomes the prey of some other being. Moss on a tree prevents proper evaporation, and prevents the access of the air, besides which it forms a refuge for all kinds of destructive insects. In most cases the sickliness of the tree, caused by the poor state of the soil, is the cause of the appearance of Moss in the branches of young trees, the natural remedy being the improvement of the ground. When Moss appears on the decaying portions of old trees, it should be scraped off. In young trees, which might be injured by the application of an iron scraper, a stiff brush may be used. The operation should be performed in autumn, and the parts attacked should be covered with milk of lime as soon as the Moss is removed. This cleansing process should be practised frequently, experience having shown that it is favourable to the recovery of the weakly trees which, through the neglect of this and other precautions, are only too frequently found in our orchards now-a-days.

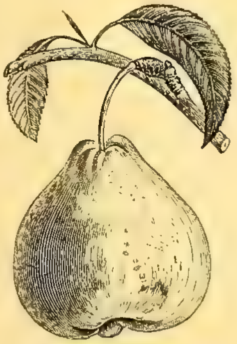


Fig. 5.—Fondante de Noel.

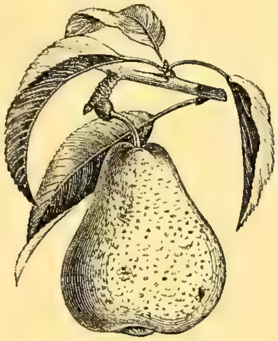


Fig. 6.—Dr. Trousseau.

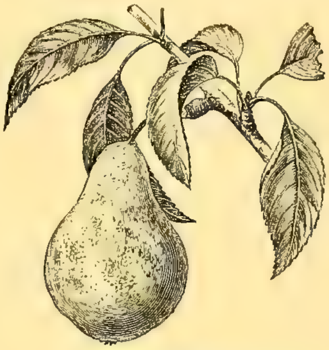


Fig. 7.—Triomphe de Jodoigne.

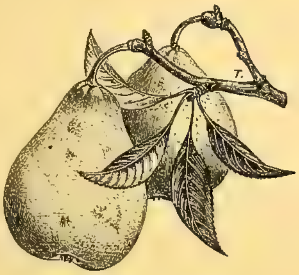


Fig. 8.—Beurré Delfosse.

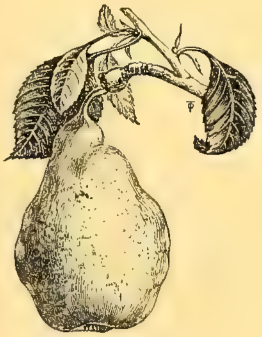


Fig. 9.—Nouvelle Fulvie.

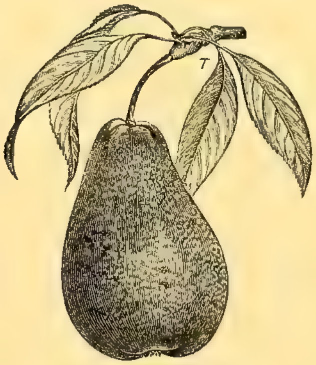


Fig. 10.—Beurré Rance.

Fruit Trees in School Yards and on the Walls of Farm Buildings.

The object of these remarks is to treat of certain subjects in detail which have already received general attention in the preceding portion of these articles. In one of the books published by the author, the part to be played by country schoolmasters in the spread of fruit tree cultivation has been treated of at length, and the question of growing tall-stemmed fruit trees in school yards and playgrounds has been discussed in a way which shows that not only can the schoolmaster's private garden be utilised, but also the scholars' recreation grounds. Fruit culture in these days of progress ought to spread beyond gardens and orchards, and extend to the roads and highways, the fields and meadows, according to the good example set by Germany and other Continental nations. This idea has, during the last few years, been alternately advocated and condemned by different authorities on the subject. Efforts have been made to plant fruit trees along the sides of railway lines, but M. Burvenich is of opinion that there is little to be hoped for in this direction for several reasons. First, because tall trees are inadmissible; and, secondly, from the numerous obstacles placed in the way by the different railway companies. But this is no reason why fruit trees should not be planted in our meadows and hedges, and along the sides of country roads. The rising generation should be taught to respect private property as they are in other countries, or as they do in Cherry and Apple growing districts. However, this is a matter for the schoolmaster and not for the fruit-grower. As instruction spreads among the masses, children will become less greedy and destructive. To begin with, tall-stemmed fruit trees might be planted in school-yards and playgrounds with great benefit. The shade of the trees would be beneficial to the children, and the schoolmaster would find his slender resources increased by the sale of the fruit to the children or the public. The trees themselves, too, would afford interesting objects for lessons at all times of the year, and the children would pick up a few notions about fruit culture that would be useful to them in after life; or, in purely agricultural districts, they might serve for a complete course of fruit culture on a small scale. The teacher might begin by explaining how they are planted, why the ground is dug for so large a space round the tree to be planted, why they should be planted on rising ground or below the general level (according as the soil is damp or dry), why the ground is dug to a certain depth, and, lastly, why the soil immediately surrounding the tree should not be trodden down within a certain distance from the stem. The different operations described in the foregoing series of articles would all serve as lessons, such as the way in which the head of the tree is formed by grafting and pruning, how diseases and pests are fought against, all of which would bring out the powers of observation and reasoning. The children thus instructed need not all become gardeners or farmers, but the knowledge they would gain would be certain to be useful to them in after life, to say nothing of the mental training which a series of well connected, well-digested lessons on the general principles of fruit culture would give them. In rural districts, where every cottage has its garden, the children would repeat at home the lessons they learned at school, and thus become the unconscious propagators of correct information on the subject of fruit growing. It may be objected that the transformation of school playgrounds into orchards would divert them from their original use, by putting obstacles in the way of the children's games, and that their means of exercise would thus be curtailed. But this objection needs but little consideration. Conscientious schoolmasters, who teach in the playground as well as in the schoolroom, tell us that the boisterous games in which children are so prone to indulge do them much more harm than good, and encourage them in rudeness of manners. A judiciously planted playground need in no way interfere with a hundred different games in which active children take a delight. The boisterousness of their play would become healthfully moderated, and torn clothes and cut knees would become the exception instead of the rule. At first, no doubt, it would require some trouble to train the children. It is undoubtedly the nature of a healthy, active child to destroy something; but, once succeed in exacting from a child a proper respect for the trees in his playground, and a wholesome moral lesson has been inculcated. It is a well known fact that where children have a garden at home to which they have free access, they are infinitely less prone to destroy the flowers or pluck the fruit in the gardens of strangers. The country child has an innate respect for the productions of the fields amongst which he lives, whereas the town-bred boy is much more liable to take liberties, possibly from curiosity, and often from love of mischief or from not knowing the result of the wanton damage he inflicts. Let children be but accustomed from their earliest years to respect fruit and flowers, and they will have gained something infinitely more valuable then the general knowledge of the principles of horticulture which they have imbibed.

Schoolmasters in this country may well be encouraged by the excellent results which this system has produced in Eastern Flanders, where several playgrounds have been planted with fruit trees. There small orchards prosper wonderfully, and the children respect the trees and fruit. In Ghent itself, M. Vande Vyver, a schoolmaster of that city, has succeeded in growing excellent Pears in the middle of his playground. It must not be thought that the spirit of destruction is absent in the future burghers of that venerable city, for some of the public plantations can tell a different tale, for, in spite of all protection, they are constantly being damaged. In this respect they seem to be far behind their London confreres, the damage done to public parks and gardens by their young frequenters being really insignificant. The experiment would therefore have a double chance of succeeding on this side of the water; and, if once tried, we might look forward to the time when school-yards and public highways would be planted with inviolated fruit trees.

In planting fruit trees in a playground, certain special precautions are necessary. The ground ought to be prepared in the ordinary way as already described, but the soil round the tree must not be walked on during the first three years. A light fence of iron or wood should be made round each tree at about 3 ft. from it. It may be thought that the surface of a much-used playground is too hard to allow trees to grow, but this is a mistaken notion. A school-yard which has been ten years in constant use has a hardened crust, but very little thicker than one which has only been used for a quarter of that time. The hard surface skin is comparatively thin, and there is plenty af soft soil at a very slight depth wherein the roots of trees may spread at their ease. As for the choice of trees, it is wrong to suppose that only Walnuts and Chestnuts will grow in ground that is continually trodden on. Except the playground be very extensive, neither the Walnut or the Chestnut should be planted. The Cherry and Plum, too, are not favourable for this mode of culture; the Apple and Pear succeeding best of all. Apples or Pears only may be planted, in a varying admixture of the two, according to the nature of the soil. In light deep soils, the Pear should predominate; whilst a heavy, compact soil, is more fitted for the Apple. Kinds which will yield grafts suitable to the locality should receive the preference. What a delightful change it would be if the millions of traditional Lime trees all over the country could be uprooted, and fruit trees planted in their stead!

M. Burvenich's experience in this matter is extremely valuable. Having been appointed by the government as instructor to the district schoolmasters of Eastern Flanders, he received orders to plant in the different playgrounds a complete collection of the best sorts of Apples and Pears, the list having been drawn up by the Belgium Arboricultural Club. By this means the best varieties have been spread throughout this part of the country, a striking proof of the part which the schoolmaster's fruit garden may play in the improvement of the fruit culture of a district. Much of the success attending M. Burvenich's efforts is due to the interest taken in the matter by M. Krevyn, the provincial school inspector, who from the first took the greatest interest in forwarding this useful movement. One country district formed a special fund for carrying out the project, thus setting an example well worthy of imitation. This is a step in the right direction, for schoolmasters are generally but ill able to afford even the small sum necessary for the purchase of the trees and tools necessary for starting. The schoolmasters applied to seem to have been almost unanimous in taking up the project, feeling that the time and labour devoted to their task would yield beneficial results in the future.

The Culture of Fruit Trees on the Walls and Gable-ends of Farm Buildings and Cottages.

This subject has already been fully treated of by M. Burvenich (see Vol. X., p. 111.). The amount of lost space which might be easily devoted to fruit growing, both in town and country, is something enormous. The information given by M. Burvenich, in his former work on the subject, may be summed up as follows:—Fruit trees may be trained against the walls and gable-ends of farm buildings, dwelling houses, barns, stables, coach-houses, and even against those of labourers' cottages. Everywhere a wall may be found which has a favourable aspect for one or other kind of fruit tree. Those positions which enjoy the benefit of the best aspect may be used for the profitable production of choice varieties. The utilisation of waste walls offers another advantage in being favourable for the growth of keeping sorts, of which there is always a great scarcity in the rural districts, owing to the difficulty of growing them in the open orchard. It is evident that such varieties can only be grown on walls having the best aspect, those fronting the north and west being reserved for good early sorts. With rare exceptions, these useful walls are covered with a scrubby Vine, or a worn-out Pear or Peach.

Pears to be Cultivated on Walls of Different Aspects.

SOUTH.	WEST.
Doyenné d'Hiver	De Tongre
Passe Colmar	Bonne Louise d'Avranches
Beurré d'Hardenpont	Beurré Dumont
EAST.	NORTH.
Beurré Diel	Beurré d'Amanlis
—— Sterckmans	Bon Chrétien, Williams'
Duchesse d'Angoulême	Beurré Hardy

These sorts should be grafted on tall stems on a free stock, so as to cover a large portion of the gable ends. Trees on tall stocks, trained as espaliers, are generally very prolific.

Details Regarding Particular Fruit Trees.

We have thus far explained generally in what manner the amateur ought to look after his orchard if he wishes to obtain the largest amount of benefit out of it; but, in order to render our explanation as clear as possible, we purpose entering into certain details respecting each particular kind, as regards the worth of the fruit, the soil, the situation, and the choice of varieties. Whoever plants an orchard does so with the intention of reaping the largest amount of benefit from the trouble and money expended. It is, however, much to be regretted that, either through indifference, or want of knowledge or attention, a bad choice of varieties is made in the first instance. Thus it is that, while we possess fine sorts of every variety, the great majority of orchards, with some rare exceptions, are filled with trees that bear fruit of an inferior quality, only fit for cooking. One reason for the comparative rarity of good fruit is the universal belief that very fine table fruit cannot be grown on tall-stemmed trees. We will try to combat these prejudices by observing that the best varieties require just the same care, and occupy just as much space, as those of medium or inferior quality. The choice of varieties may easily undergo modification, according to the purpose which the grower has in view. The soil and situation will also influence his choice. For instance, where the orchard is situated at a distance from a large town, and the fruit has to be delivered in one or two batches, the varieties ought to be restricted as much as possible. In all cases our choice should be founded, in the first place, on the quality of the fruit. Inferior qualities should never be planted by any one, be he gardener or orchardist. Secondly, we must consider the time of ripening, the varieties which come to maturity either very early or very late being the best. For orchards near town, stone-fruit trees are recommended, as they succeed each other during the whole of the summer, and just at the time of the year when pipped fruits are scarcest. Although the best fruits are generally those which ripen in autumn or about the beginning of winter, besides being easily transportable and saleable, we find orchardists too much given to planting summer varieties, in accordance with the old absurd routine. Thirdly, we should consider vigour of growth as an important item in deciding our choice. The large size to which the crown of a free-growing tree ought to be grown is a sufficient reason for rejecting slow-growing varieties, which produce weak wood and poor fruit, besides being subject to all kinds of diseases and the attacks of insects and other pests. Fertility is another quality that is important to be considered in choosing trees for growing in the open air, for the numerous devices for improving the fertility of dwarf trees are wholly inapplicable to tall trees growing in the orchard or garden. The firmness with which the fruit is attached to the stalk is another good quality which invites notice. Certain varieties of Pears and Apples drop their fruit at the slightest breath of wind, either through an inherent defect, or from the fruit being too heavy. This is a point deserving great consideration, and the general appearance of the fruit and its stalk may often help us in forming our opinion. In Pears of medium size, for instance, a long, thin, woody stalk is a good sign. Those varieties, too, which bear their fruit on longish shoots, instead of on short twigs, should be chosen, in spite of the stalks being somewhat short. To sum up, what we require for the orchard are varieties which yield abundance of good fruit firmly attached to their branches, which ripen without passing away too quickly, and bear transport without injury. If one day we see our hedges and roads planted with fruit trees, as in Germany, we must be influenced in our choice by another series of conditions. In Germany, where this kind of plantation has been long in vogue, Pears and Apples are divided into three different categories. First we have street trees, the fruit of which is, for the most part, uneatable. These are reserved for planting by the sides of roads and highways, the fruit being used for making cider and perry. Then we have field trees, which are planted in fields and meadows, the fruit of which is used for drying or for making syrups and preserves, as well as for cooking; and, thirdly, we have garden trees, which bear choice fruit for the table, and which are grown in gardens or walled orchards. When the object of planting is the sale of the fruit, the number of varieties ought to be limited as much as possible; and equal circumspection ought to be exercised in the choice of the trees. Errors in this direction are generally disastrous in their consequences, being only perceived when

Large Bunch of Gros Guillaume Grapes.—A bunch of this Grape, grown by Mr. Roberts, at Charleville, Tullamore, Ireland, weighed, as recorded in the papers, 23 lb. 5 oz., and measured 24 in. in length, by 22½ in. across the shoulders. This is the heaviest weight recorded of any black Grape in this country; a wonderful weight, indeed, but not so wonderful to our mind as that a bunch of the dimensions given should have weighed so much. It cannot have tapered so very rapidly as the bunches of this variety always do; and, if we had been told the dimensions only, we should have guessed the weight at 16 lb. We hope that Mr. Roberts has furnished a photograph of the bunch to one or other of the garden papers, so as to hand down its portrait with other wonderful bunches of the present decade. If he has, our surmise as to the shape of it may be found correct.—" The Gardener."

Rust on Grapes.—This is an affection or injury to the skin of the berries, giving them a rusty appearance. It is caused whilst the skin is young and tender, about thinning-time, and disfigures them even when ripe. When once it is produced there is no remedy. The best that can be done when it is observed is to cut out the affected berries. Many views have been entertained and many opinions have been held as to the causes of rust. Touching the berries with the hand, or with the hair of the head, is one. It is well, therefore, not to touch or handle the berries in any way; they are easily bruised and spoiled; but this is not the chief cause of rust. Cold draughts of air are also suspected. Avoid, therefore, cold draughts or currents of air whilst the Grapes are young; they are very injurious, even if rust be not caused by them. Rust is most common in early houses, where a good deal of firing is required, and especially in those where the old-fashioned flues are still in use. An extra-heated flue, with the inevitable dry, parched air, and the fumes of sulphur, will cause rust to a certainty; and so also will sulphur, when applied to hot pipes, as is frequently done in order to destroy red spider. It is good judgment, therefore, to avoid the use of sulphur whilst the berries are so young and tender. Later on, the skin becomes more hardened, and is not so easily injured.—" Florist."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Emile d'Heyst—a Good November Pear.—This, when ripe, is a very fine Pear—bright yellow in colour, with patches of cinnamon-russet, giving its fruit a rich and inviting appearance. Its flesh is tender, melting, and slightly perfumed. The fruit keeps well after it is ripe; much longer, indeed, than that of either Marie Louise or Louise Bonne of Jersey, which it succeeds.—A. H., *Thoresby.*

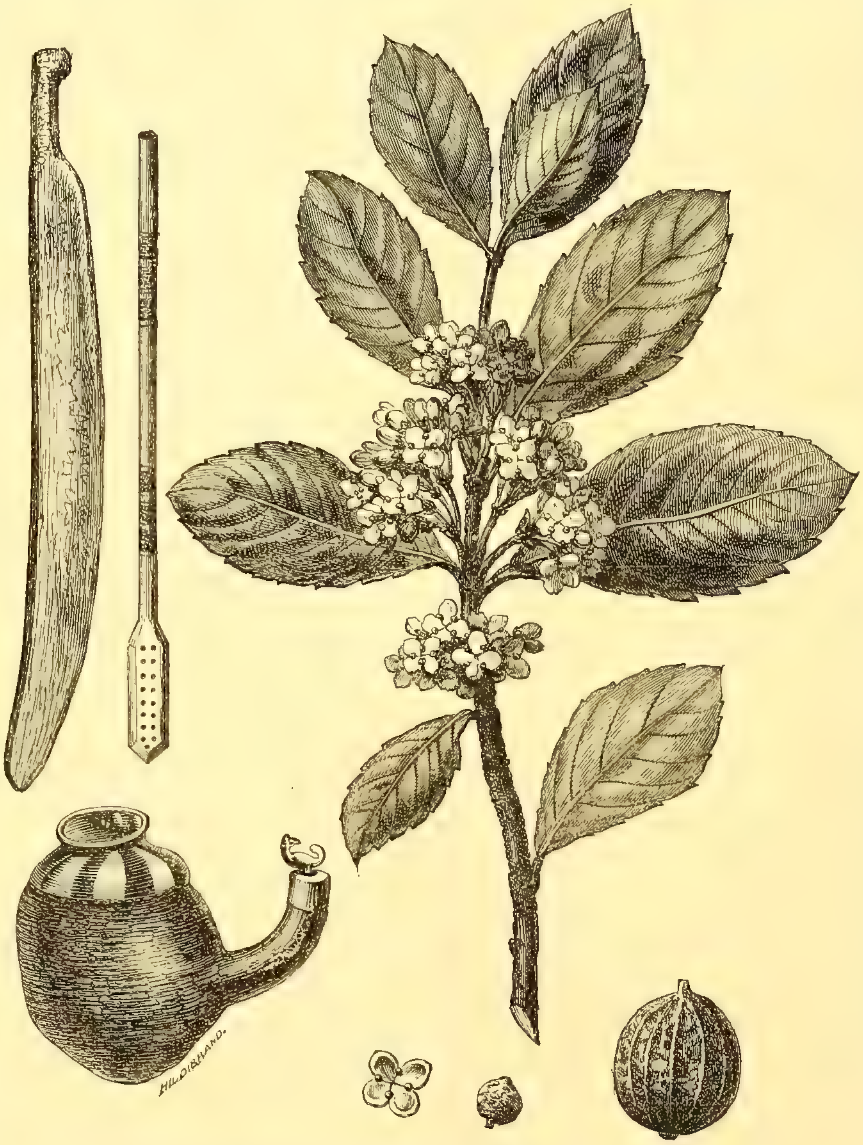
Willows for Tying Fruit Trees.—We tie all our Raspberry canes with Willow twigs, and also the stronger branches of wall trees, as well as Currant and Gooseberry stems to stakes, and so well do they answer for all these purposes that I intend tying all our Vine rods up with them this winter.—CAMBRIAN.

Pears on Pear Stocks.—These should be planted in soils in which those budded on Quince stocks do not succeed. This is a rare occurrence, but there are to a certainty some soils in which Pears on the Quince will not flourish, even when double-grafted.—F. R.

Flower and Fruit of the Paradise Stock.—Owing to an error in punctuation last week, the fact that M. Thiebault both drew and engraved the beautiful illustrations of the flower and fruit of the true Paradise Stock was not clearly expressed.

THE PARAGUAY TEA.

The plant of which we here figure a flowering branch yields one of the most important of the vegetable products of South America. The Maté or Paraguay Tea occupies relatively the same position in South America, which is filled in this country by the Chinese plant; and it is calculated that at least 8,000,000 lb. are annually consumed in that country. It is yielded by the leaves and young shoots of a species, or of several nearly-allied species, of Ilex, not very dissimilar to our ordinary Holly. It is a shrub or small tree with smooth, egg-shaped, irregularly serrate leaves, and axillary racemes of small white flowers, which are succeeded by berries as large as a Pea. Mr. Miers has described several species in his paper on "The History of the Maté Plant," all of which produce the herb, and are by most authors considered as forms of one species, Ilex paraquayensis. In the settlements of the Indians in Paraguay under the dominion of the Spanish Government, the preparation of Maté—or Yerba, "the herb," as it was called—constituted the principal branch of industry in the country. The plant is prepared in different ways; sometimes larger branches are roughly cut or torn from the plants, and placed on hurdles over a wood fire until they are sufficiently roasted, after which they are placed on a hard floor and beaten; this operation knocks off the leaves and reduces them to a powder, which is then ready for use. More recently, however, the leaves have been roasted in large cast iron pans set in brickwork, after the style in which Chinese Tea is prepared; and, when they are sufficiently dry, they are powdered by machinery, and then packed in bags. The Maté owes its refreshing properties, which seem to be very considerable, to the presence of a peculiar acid, as well as to theine, which has also been detected in it. The actual results of the use of Maté seem somewhat doubtful, for while some maintain that it will stimulate the languid, and, at the same time, calm the restless, others consider its use prejudicial to health. The Creoles of South America are especially addicted to the use of it, always taking a supply of the leaves with them in their travels, and drinking an infusion of them before each meal. In our figure is also represented the small-spouted vessel (which gives its name of Maté to the plant) in which the leaves are infused; they will bear to be steeped two or three times, but fresh water must be used every time, and the infusion must not be allowed to stand, or it will become deep black. The tube above is called a bombilla; through this the hot infusion is sucked, the small holes preventing the escape of the soaked leaves, which float on the top. Specimens of these objects may be seen in the Kew Economical Museum.—B. J.



Maté or Paraguay Tea, with Implements Employed in its Preparation.

A CHINESE GARDEN.

Last year I paid a visit to the Rev. W. Duffus, of Swatow, and, wishing to see something of the country, I made a short expedition into the interior. We went to see a garden belonging to a family that had once been very wealthy. The grounds are not large, but appear at one time to have been well kept, for there are still the remins of some very interesting things, such as miniature pagodas, rustic arches, ornamental ponds, &c. The whole aspect of the place is thoroughly Chinese, most of the flowers and shrubs being tortured into every imaginable shape, so as to resemble different animals, houses, ships, &c., a style of horticulture of which this strange people appear to be very fond. Opposite the front entrance was a huge lion, made of a Banian tree. The legs appeared as thick in proportion as those of an elephant, and the eyes were represented by two small baskets painted white, with a black spot in the centre. The optic nerve was a piece of cord fixed to a branch higher up, so that the eyes appeared to be dangling in the brute's head; and their movements in the breeze coveyed the impression that the onlookers were being strictly watched, and might at any moment be called to account for their conduct. Farther on we came to a gigantic frog, which seemed to be in the very act of leaping off his perch on to the walk; then an elephant, with a most wonderful looking trunk, but not fully developed. On the other side was a great crab with such lusty looking claws that one felt inclined to keep on the farthest side of the path. Then we came to a goose, a cock, a tiger, a fabulous animal whose name I forgot, and, last of all, the traditional Chinese dragon. All these figures were made of an evergreen shrub, called "Serissa," which is a great favourite with Chinese gardeners, probably because it bears twisting into all kinds of grotesque shapes. There were several species of Pine, apparently Japanese, that had a very venerable appearance, and we were solemnly assured that they were at least three or four hundred years old, and were highly prized on that account. The trunks were so much decayed that one wondered how they could keep in life at all, some of them having only a few shreds of rotten-looking wood, not more than an inch in thickness, connecting the branches with the roots, while the trees themselves were 15 ft. or 20 ft. high. Some members of the family to whom this garden belonged were at one time most bitter persecutors of the Christians here; but, happily, it is so no longer, for the one who brought us to see the place frequently attends the services himself. While we were examining the different objects of interest we noticed that the head gardener, who had designed and executed the works of art already referred to, looked rather sullen, and kept aloof, as if the presence of foreigners in his garden was anything but agreeable to him. A little honest praise of his garden, however, caused his face to relax into a smile, and he looked much more cheerful and resigned during the remainder of our visit. James Lamont, *Hong Kong.*

A PRETTY PARASITE.

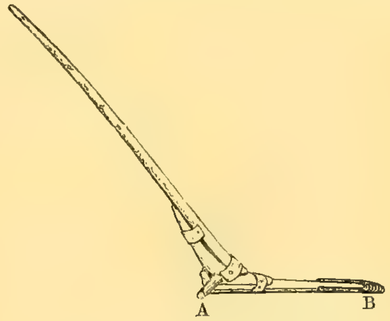
On one of the walls in the Glasnevin Garden, devoted to half-hardy shrubs and other plants, there is a fan-trained specimen of the pretty yellow-flowered Forsythia suspensa. For some weeks past one half of the aforesaid Forsythia has been clothed with a beauty not its own, and presented an aspect pretty as it was novel. In fact, for some square yards of wall there was nothing to be seen but a dense entanglement of pearly-coloured, Lily-of-the-Valley-like flowers, smelling sweetly as Heliotrope, and very like it. We dare say not a few of the visitors to the garden were puzzled as to one side of the Forsythia being a mass of tiny flowers, and the other bare of anything of the kind, and turned away anxious to get the name of this novel, sweet-scented, late-flowering shrub. No doubt they were surprised when told that the mass of floral beauty they were so struck with and admired so much did not belong to the shrub at all, but to a grasping little stranger plant only introduced to it a few months since, and which, now holding its almost every branch and branchlet in its tight embrace, garlanded them with flowers as unlike as possible to their own, and at a season, too, quite different. Well, the plant which produced this wealth of flowers on the open wall at a period of the year when outdoor floral effects are scarcely to be looked for, and which, moreover, bore them in full beauty till the beginning of the present week or so, when a smart touch of some five or more degrees of frost spoiled their fair and gay aspect, is no other than that pretty American Dodder (Cuscuta Cephalanthi). The specific name was given it at a time when the erroneous opinion prevailed that each species of Cuscuta attached itself and confined its attachment to some particular plant; the present species being frequently found growing about St. Louis on Cephalanthus, it was thought right to thus specifically distinguish it. This species has long been a pretty and interesting object in the cool greenhouse at Glasnevin, where the little alien was clothing some plant with its pretty pearl necklaces; but it was only the present year it occurred to Dr. Moore to try it out of doors. This he did with the results just described. The flowers are produced in marvellous profusion, in clusters of ten or a dozen at short intervals all along the brown, fiddle-string-like, twining stems. Each flower is nearly the size of, and not unlike in shape, that of the Lily of the Valley, and as pleasingly fragrant. Though the frost has destroyed the beauty of the flowers, there is no occasion for apprehension that the Dodder itself will not come safely through the winter; and, if permitted to extend itself, clothe a much larger portion of the Forsythia with its clustering flowerets next and other years, till ultimately the supporting plant succumbs to the exhausting operations of this pretty vegetable vampire. The smallest bit of it will grow if attached to any exogenous plant or shrub, and we have no doubt Dr. Moore will be happy to give a morsel to any one caring to grow or experiment with it.—"Irish Farmer's Gazette."

It is no fable, that the Duchesse de Galliera has made a present of her mansion in the Rue Varennes, to the Comte and Comtesse de Paris. It stands in a garden of eleven acres, on the grassy part of which Brittany cows graze. This is how the Duchess came to think of giving her town residence to the Royal pair:—They were regretting to her the impossibility of holding large receptions in the suite of rooms the Duc d'Aumale assigned them in the Hôtel Fould. Said the Comte de Paris, "What we want is a villa somewhere within the fortifications, standing in spacious grounds, in which we could give garden parties. The garden party is an admirable institution. Society has grown unmanageable. One can receive a crowd on a lawn, which would be insupportable in a drawing-room. With sunshine, flowers, and a musical band, a little light refreshment goes far. There is no degrading scramble at the buffet. One's health is not wasted by turning night into day."—*Truth.*

THE CAS CROM OR SKYE PLOUGH.

Having obtained a Cas Crom from a Skye man some years since, I forward a sketch of the same, as it appears to illustrate the Greek plough of your issue of Dec. 1 (see p. 531). In describing Skye, Anderson, in his "Guide to the Highlands," says the distinguishing feature of its husbandry is the use of the cas crom, or ancient crooked spade or plough, an instrument, to all appearance, most clumsy and unwieldly, yet a most suitable and efficient one under the circumstances in which it is used. The cas crom is formed either of a stout, obtusely angled knee of wood or two pieces bound together with iron; the upper handle, or limb, is 4 ft. or 5 ft. long, the lower about 2½ ft., and shod at the point with a sharp, flat piece of iron, which is driven into the soil by means of a lateral wooden peg (A), projecting from the angle on which the right foot acts. With this implement a man can turn over a great deal more ground than he could do with a fork or garden spade, and, though, of course, it turns over much less ground than the ordinary horse plough could do, yet it is much better adapted than the horse plough for the tillage of the small rock-encumbered patches of ground of which much of the small tenements consist. C. Isham.

Lamport.



Cas Crom, or Ancient Crooked Spade.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Fruit Trees.—The pruning of fruit trees, in common with all other operations connected with gardening, should never be delayed longer than necessary, inasmuch as where any work is put off beyond the time that it should be completed, it causes an accumulation that necessitates additional efforts to clear off—the results of which are not generally satisfactory; but, in respect to the pruning of fruit trees—with the exception of Peaches and Nectarines—there is an additional reason why the operation should be completed by the end of the year; pruning is chilly, uncomfortable work, and if delayed until the colder weather which we generally experience during the first months of the year, it makes it still more uncomfortable; and, in the case of hardy fruits, the work is quite as well done immediately the leaves are off as if deferred until later.

Pruning Gooseberries.—With respect to these, it is sometimes urged that it is better to leave the pruning until nearer spring, so that if the fruit buds are attacked by sparrows, finches, or tits, allowance can then be made for the buds thus destroyed by leaving the shoots closer. This is a poor way of reasoning, as the birds act indiscriminately in their attacks, not by any means doing their work regularly, often making a clean sweep of a portion of the branches, and leaving others untouched; any after-pruning regulated on such destruction would obviously render necessary a retention of branches in some parts of the trees so as to overcrowd, whilst others would require to be cut away that ought to be retained to maintain the requisite form and symmetry of the bushes; and it is a matter of no great difficulty to take means that will either scare the birds from touching the buds, or render them so unpalatable as to make them safe. It is not an easy matter in writing to give directions that will convey a clear idea how to prune successfully, nevertheless, for the guidance of those who have had little experience in such work, I may offer a few suggestions likely to be of use. Gooseberries bear not only from the old wood on which permanent fruit spurs are formed, but also from the preceding summer's shoots; in the case of young trees that have not attained the requisite size, a sufficient number of the strongest shoots, best placed for the future formation of the tree, must be retained, neither reducing their number so far as to make the trees too thin, or leaving so many as would cause overcrowding; the centre of each tree ought to be left the most open, so as to admit sun and air freely, without which the fruit will never attain its requisite quality. All the short, weaker growths, as a matter of course, should be cut away, to leave room between the larger branches for the hand to pass freely in gathering the fruit; the young shoots ought to be slightly shortened back by cutting away one-fourth or a fifth of their points, which will have the effect of causing them to break out at the point severed, from which, in all probability, it will be necessary, at next year's pruning, to retain a couple of shoots so as to furnish the trees properly. Some difference in the use of the knife will require to be made between the erect-growing kinds and those of a drooping habit; with the latter, the under branches, that cling too close to the ground, will need to be removed, retaining more towards the middle of the trees; in the case of older bushes, that have attained a size sufficiently large, it is well each year to cut out from near where they spring a few of the older branches. If the trees be in good health, this will have the effect of causing them to make strong young shoots from the points where the branches are thus cut back to; by yearly following this up, the trees will be kept furnished with the necessary quantity of young wood springing from the base, a matter of importance in the cultivation of this fruit.

Red and White Currants also bear fruit form both last year's wood and from permanent fruit spurs, with which, on well-managed trees, the old wood is thickly studded; but it is on the latter that the greatest weight of fruit may be looked for. With young trees of these, as with Gooseberries, it is necessary to be guided in the shoots that are to be retained by the future form, shortening the young shoots that are kept a little. With old Currant bushes, of the Red and White kinds, I have always found it answer best to take out annually, near the bottom, a few of the branches, as advised for Gooseberries; by this means only can the trees be kept furnished with young wood from top to bottom. Immediately the pruning is done, I should advise means to be taken for the protection of the buds. The use of thick white cotton thread, wound from point to point of a portion of the branches, and allowed to hang in loose festoons, so as to move with the wind, will generally, but not always, be found a sufficient deterrent for sparrows; not so with bullfinches and tomtits, they take no more notice of it than if non-existant. Previous to stringing on the cotton, it will be much the safest to dress the trees with lime, soot, and water, mixed to the consistency of ordinary whitewash, and applied by a syringe furnished with a rose perforated with holes of considerable size. Choose a dry, windy day for the application, so that the mixture may get thoroughly dried on, when it will resist a good deal of wet weather without being removed; after this a little of the, cotton wound on the trees as described, will be an additional safeguard. The whole of the work connected with this bud-protection need not occupy much time; a handy man will syringe on the mixture and put on the threads to a good number of trees in a few hours; and it is necessary to take this precaution, especially in small gardens, where birds are generally much more persistant in their attacks than in the large breadths under cultivation in market gardens. It is not only the current year's crop that suffers when the trees are stripped; but when, as is frequently the case, the fruit-spurs on the old wood are denuded of their buds, they generally die back, leaving the lower portion of the trees permanently unfruitful. Black Currants require comparatively little pruning, except an annual cutting out, near the base, of a few of the branches, from which will spring stout shoots to take the place of others that are cut away in after years; in addition to this, where the branches are too much crowded, the weaker ones ought to be thinned out.

Raspberries.—Some discrimination should be made in allowing considerable difference as to the length the canes are shortened back to; where they are very strong and vigorous, and trained in the form of arches by a portion of the shoots from each stool being bent over, and tied to others from the adjoining plant, 5 ft. will not be too long to leave them, as when bent, as this method of training involves, it assists the bottom eyes to break; the same holds good when the shoots are each trained in a slanting direction to strained wire supports at an angle of about 50°; this also assists the bottom eyes to break; and even if tied upright to stakes where they are strong and well furnished with roots, a much greater number of eyes will push bearing shoots,than where the plants are comparatively weak; but, when strong, do not be induced to retain too many shoots, the result of which is the production of a thicket of bearing wood impermeable to sun, which is more necessary to this soft fruit than many others.

Apples.—Bush-shaped trees are the best adapted for gardens, large or small, where culinary vegetables are grown near; in pruning young trees of this description, the operator should always look well ahead so as to leave such branches as are essential to the future balance of the tree, with a view to make it shapely in after years. Of the two extremes, it is better to err in cutting out to leave it a little too thin rather than maintain an overcrowded condition; after the branches have attained the height of a few feet, and it is desirable to increase their number, such strong shoots should be cut back at the point where it is necessary they should branch out as will induce them to do so, but anything like severe pruning by cutting hard in the shoots collectively ought to be avoided; even in the case of such as possess undue vigour a too free use of the knife will only aggravate the evil by directing the whole energies of the tree to the production of wood growth in the place of forming fruit spurs. Pyramidal-shaped trees often have a tendency to push the greater portion of their growth into the leading branches, which, despite a free use of the knife, keep continually producing a number of gross shoots, leaving the lower side branches comparatively weak. Where this happens I have found it best to tie the strongest of these rank shoots out, bending them down in a horizontal position, leaving one somewhat weaker as a leader. Such other winter pruning as trees of this shape require is regulating the number of side shoots, so as to keep each sufficiently clear of the other, and slightly shortening back to keep the tree within due bounds. With standard Apples little is required besides keeping the branches thin enough to admit light and air, and not allowing the trees to stand so closely together.

Pears, restricted in size, are much more generally grown as pyramids than bush-shaped; but, in both cases, the pruning will require to be of a similar description to that advised for Apples, keeping in view the generally more erect growing habit of Pears; in such varieties that particularly exhibit this disposition, it is necessary to keep them well open in the centre, for, if at all crowded, the branches are lashed against each other as to knock off a good deal of the fruit.

Plums and Cherries, as a rule, need less pruning than Apples and Pears; as, from the fruit being less liable to be blown off, they will succeed fuller of branches; but young trees should have the knife sufficiently used to preserve a shapely outline. In the case of all these fruits on walls, fan-shaped trees for general use are the best; in pruning these whilst young, especially in the first year or two after their being obtained from the nurseries, it is necessary to be careful in not allowing a few strong branches, such as produced by many trees, to take the lead too far, as, if left unchecked, they absorb the greater portion of the strength, leaving the weaker branches completely behind; this can only be corrected by cutting such strong growths back freely considerably lower than the points of the weaker shoots, which, if performed timely and persevered with systematically, will restore the wonted balance. As the pruning of wall trees is completed, they should be at once nailed or tied, according to whichever method they are grown under, for, although pruning is cold work in cold weather, nailing is still worse, and when all operations of this kind are completed early, it allows leisure for seasonable works that are ever coming due.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

December 10.—Potting another quantity of Potatoes that has been previously started in the Pine stove. Pruning first Muscat-house, and washing the paint with soft soap and hot water. Finishing pruning and nailing Pears on east and west walls. Taking up Box edgings and re-making them.

Dec. 11.—Putting a few Herbaceous Calceolarias into their flowering pots. Getting more leaves into pot Vine pit, in order to increase the bottom-heat. Collecting horse droppings for Mushroom beds, and turning over a large heap to sweeten. Getting up a few more clumps of Mint for forcing. Veitch's Autumn Self-protecting Broccoli still in fine condition.

Dec. 12—Shifting Campanulas. Putting into gentle heat a few plants of Dielytra and Deutzia gracilis. Painting Muscat Vines, lightly forking over the surface of the border, and adding a little more fresh loam to it. Fumigating Cinerarias and Cucumbers to kill green fly. Clearing all leaves and rubbish out of all the spouting; also all catch-pools, so that heavy storms may pass off freely.

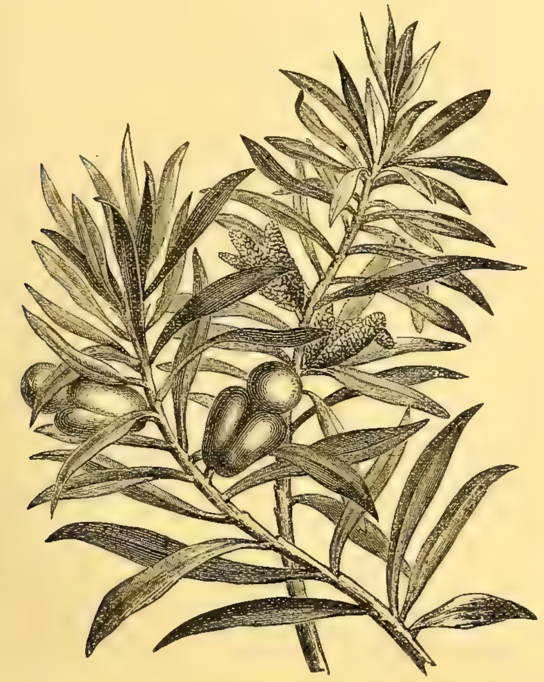
Dec. 13.—Getting into the forcing-pits more Lily of the Valley, Hyacinths, Narcissi, Tulips, and Cyclamens. Covering up more Endive and Lettuce to blanch. Levelling ground in pleasure grounds, and laying down new turf. Looking over fruit room, and clearing away any fruits that are decaying.

Dec. 14.—Getting in 100 pots of Osborn's Forcing French Beans, and adding a little more earth to those already up. Forking up shrubbery borders, and getting them filled with spring flowering plants. Getting a pit filled with leaves in which to plunge Strawberry plants. Getting on with trenching as fast as the weather will permit. Looking over the Pines, watering and tying up all that require it.

Dec. 15.—Clearing up pleasure grounds, and rolling down all gravel firmly. Looking over Grapes in bottles, removing any that are bad, and filling up the bottles where required. Thinning-out Mignonette, and tying up that which is in a more forward state. Fruit in use for dessert—Pines, Grapes, Pears, Apples, Medlars, and Nuts.

PODOCARPUS.

This interesting Taxus-like genus is but little represented in gardens, notwithstanding the fact that it contains numerous varieties, probably upwards of fifty, introduced into Britain from almost every quarter of the globe; the majority of them, however, are not sufficiently hardy to withstand our winters in the open ground, especially those from tropical climes. Nevertheless, there are a few from temperate regions that may be considered hardy in the south and west of England, and one of the very hardiest is P. Koraiana, a sturdy, dark-foliaged, dwarf tree from Japan, much resembling the Irish Yew, but having longer and stouter leaves. P. chinensis and P. alpina are also tolerably hardy in mild localities. The latter is a graceful plant, of slender habit; its foliage, too, is small and neat. P. macrophylla is a handsome variety, the leaves of which are about 4 in. long and about ¼ in. broad. A variegated variety of this, as well as of P. chinensis, is in the trade. P. macrophylla can scarcely be called hardy; it may, however, perhaps be able to withstand our winters in sheltered sites, near the sea, on the south coast. The best collection of Podocarpus with which I am acquainted is in the Lucombe Nurseries, Exeter, where they seem to thrive exceedingly well. G. B.


Podocarpus macrophylla.

Colour from Leaves of Shrubs.—In grouping low-growing shrubs there is a beautiful feature that should be kept in view—the autumnal effects of foliage. Compared with trees, their varied hues are as bright and attractive, and the diversity of tints and colours quite as marked. We lately noticed just such a mass of showy leaves as pleases the eye of an artist, and the taste of every lover of plants. The Spiræa prunifolia, with deep crimson foliage, vied in tint with the Oak-leaved Hydrangea; golden yellow was supplied by Forsythias, and bright scarlet by the despised Sumach. Peeping out from this mass of bright colours, a single shoot of chance Blackberry, of the deepest magenta, made its presence acceptable for once, at least. A trailing Ampelopsis, loosened from support on a tree near by, had found its way to the group, and festooned its branches with regal splender. A Sweet Bay (Magnolia glauca) made quite a contrast to the others, with its light glaucous, green foliage, and an imaginative person might easily fancy that the fragrance of its long-past bloom still lingered among its leaves.—"Tribune."

Trees in Marylebone.—A letter was read from the inhabitants of St. Edmund's Terrace, North-gate, Regent's Park, stating that they proposed to plant Lime trees, 8 ft. or 10 ft. high, and 8 yards or 10 yards apart—fifty trees to be planted on each side, the expense to be defrayed by subscription, and asking the Vestry's permission.—Mr. G. Edwards moved that the application be granted.—Mr. Carr seconded, remarking that the terrace was a very suitable place for trees. [It is a pity better trees than the Lime were not chosen.]

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

December 4.

This meeting was in every way a satisfactory one, both flowers, fruits, and vegetables being shown in considerable numbers, and these, too, of an interesting description. The principal features were collections of flowering and ornamental-leaved plants from Messrs. Veitch & Son, and Mr. William Bull, Chelsea.

First-class Certificates.—These were awarded to the following new and rare plants:—

Croton picturatum (Bull).—A very distinct, highly-coloured variety from the New Hebrides. The older leaves are some 18 in. long and about 1 in. broad, somewhat irregular at the edge. The midrib is bright red, and the surface is marked in an irreguler blotchy manner with clear yellow. The leaves have an oblong leafy peltate base, from the back of which the costa is continued like an excurrent thread, at the end of which is appended another elongated leafy portion.

Chrysanthemum Golden Empress of India (E. G. Henderson).—A beautiful incurved flower, globular in form, and large in size; its colour is a rich creamy-yellow. Well worthy of a place in every collection.

Tropæolum Perfection (R. Dean).—A climbing variety, with brilliant dark scarlet flowers.

Cibotium pruinatum (Bull).—A distinct Tree-Fern, with elegant, broad, gracefully-drooping fronds, from 10 ft. to 12 ft. in length.

Pelargonium White Vesuvius (Cannell).—A white-flowered sport from the well-known scarlet Vesuvius, which it resembles in habit and general good qualities. For flower garden decoration, or for culture in pots for winter-flowering, this will prove one of the most valuable Pelargoniums which have been introduced for some time past.

Tree Carnation A. Alegatiere (Turner).—A kind remarkable for its good habit, and for producing an abundance of bright crimson flowers of good form and substance. One of the best winter-blooming kinds which we have seen.

Chrysanthemum Fulton (Jackson & Son).—A Japanese variety, the flowers of which consist of gracefully-disposed petals of a rich lemon-yellow colour.

Broccoli Self-protecting (Veitch).—The best new Broccoli which has been sent out for some time. It makes an excellent succession to Veitch's Autumn Giant, and comes in just before Snow's Winter White. The leaves grow over the curd in such a manner that frost is entirely excluded, and the flower kept firm and white.

Miscellaneous Subjects.—In Messrs. Veitch's collection were well-flowered examples of Oncidium Barkeri, Lælia autumnalis, the beautifully-marked Oncidium Forbesi, very fine specimens of Cattleya exoniensis, Saccolobium giganteum, Calanthes, and Lady's Slippers. The same firm also exhibited cut spikes of Poinsettia pulcherrima rosea, the bracts of which are broad and of good substance, and the colour dazzling rosy-scarlet. A basket of plants of Bouvardia leiantha was also shown by Messrs. Veitch. This is a dwarf-growing kind, and one which produces abundance of bright orange scarlet blossoms, exceedingly useful for cutting at this season of the year. Specimens of Fuchsia Dominiana were also shown in good condition as regards flower. Rhododendron Arthur Potts, a garden hybrid from Messrs. Veitch, was much admired on account of its bright orange-scarlet blossoms, which are produced in large clusters on every young shoot. A basketful of well-flowered plants of the sweet-scented Daphne indica rubra was also exhibited. In Mr. Bull's collection were stately plants of Encephalartos villosus ampliatus, Cocos Weddeliana; remarkably well-variegated plants of the graceful Curcilago recurvata variegata, Anthurium Veitchi, Dracæna Goldiana, and a pan full of small, well-flowered plants of the old, but now somewhat scarce, Impatiens Jeroniæ. These, together with one of the best-flowered branches of Lapageria rosea superba we have ever seen, and a plant of Pilumna fragrans, several Ferns and Crotons, and Tillandsia Lindeni, made this a very effective group. Mr. Cannell, of Swanley, sent, in addition to the white-flowered Vesuvius, other Pelargoniums. Mr. Chambers, Westlake Nursery, Spring Grove, Isleworth, contributed cut sprays of Bougainvillea glabra, being a third succession within 12 months. Messrs. E. G. Henderson & Son, of Pine-apple Place, showed cut blooms of incurved Chrysanthemums, and Messrs. Jackson & Son sent blooms of Japanese varieties. Mr. Moorman, gardener to the Misses Christy, Kingston, also sent a collection of Chrysanthemum blooms. Plants of the graceful Asplenium viviparum came from Mr. Chambers. Cut flowers of herbaceous plants were furnished by Mr. Parker, of Tooting; amongst them were blooms of Helleborus altifolius, niger maximus Tussilago fragrans, Gentiana acaulis, Pansies, and Tritoma grandis. Mr. W. Paul showed good examples of Picea nobilis. A bank of double white Primulas, from the Horticultural Society's Gardens, was very effective. Mr. Mill, The Gardens, Rendlesham Hall, Woodbridge, sent a remarkably fine spike of Oncidium æmulum, measuring 12 ft. in height, and furnished with numerous chocolate-coloured blossoms. Mr. Ollerhead, gardener to Sir H. Peek, Wimbledon, sent flowering plants of Centropogon lucianus in good condition, showing its utility as a pot plant at this season of the year.

Fruit and Vegetables.—Mr. Wildsmith, gardener to Viscount Eversley, contributed good examples of Barbarossa Grapes, and Mr.

Miller, The Gardens, Combe Abbey, sent fine examples of Smooth Cayenne Pine-apples. From Mr. Muir, Margan Park, South Wales, came a good collection of Oranges, Lemons, and Citrons. Mr. William Skinner, Boughton, near Maidstone, sent a collection of Apples, consisting of thirty-four varieties. Among them were fine specimens of Stone's Apple, Blenheim Orange, Warner's King, and other good kitchen varieties; and among dessert kinds we noticed clean, well-coloured fruits of King of the Pippins, Court Pendu Plât, and Cox's Orange Pippin. A good collection of Apples also came from Mr. Fenn, Sulhampstead, Reading. Mr. Ford, St. Leonard's Lee, Horsham, also sent a remarkably fine collection of Apples, amongst which were Devonshire Queen, Blenheim Orange, Winter Pearmain, Cellini, Golden Reinette, and others. From Mr. J. Atkins, gardener to Colonel Lloyd-Lindsay, Wantage, came fine examples of Muscat of Alexandria, Black Alicante, and Black Hamburgh Grapes, good both in bunch, berry, and bloom. Mr. Jones, Bentley Priory, sent remarkably fine examples of Veitch's Autumn Giant Cauliflower, in order to show its adaptability for winter as well as for autumn use. Good Cucumbers were contributed by Mr. Gilbert, of Burghley, who also sent good examples of Veitch's Autumn Giant Cauliflower.

SCOTTISH HORTICULTURAL ASSOCIATION.

The ordinary monthly meeting of this Association was held at 5, St. Andrew's Square, on the evening of the 4th inst. There was a large attendance of members. The President, Mr. Dunn, Dalkeith Palace Gardens, occupied the chair. Fifteen new members were duly admitted, and seventeen new names were proposed and seconded for admission as members at next meeting. The subject proposed for discussion was the Kitchen Garden, by Mr. Lawrence Dow, Saughton Hall. At the outset he urged upon young gardeners the necessity of devoting great attention to the proper management of the kitchen garden, so as to keep up a constant supply of first-class vegetables; some were very apt to overlook this department, in their anxiety to have a fine display of greenhouse and bedding plants. He then in a practical and lucid manner described the different methods in which he had been most successful in growing Potatoes, Onions, Jerusalem Artichokes, Parsley, and Asparagus. Several members expressed concurrence with Mr. Dow's views as to the importance of the subject, and also as to the modes of culture pursued. Mr. Dow received the thanks of the meeting for his paper, and, at their request, agreed to continue the subject at a future time. A communication from Mr. James Morrison, Preston Hall, was read, advocating the autumn planting of the Potato, and also attaching great importance to the proper ripening of the seed tubers. A vote of thanks was passed to Mr. Morrison for his contribution. It was intimated that the subject for next meeting was the Phlox and Pentstemon, by Mr. Jas. Grieve, Pilrig Park Nursery.

Potatoes Shown at Bingley Hall, Birmingham.—At the late Bingley Show, the Messrs. Hooper, Covent Garden, exhibited an interesting collection of American Potatoes, grown by the Messrs. Bliss, of New York. The best white kinds amongst them were Snowflake, Peerless, Climax, Early Dimmock, Shelburne, and Burbank's Seedling, a white kind, of the Rose type and form. Of red sorts, the handsomest were Trophy, a new kind, having the beauty of Snowflake, with a bright red skin; Triumph, a handsome round kind; Ruby, early kidney; Manhattan, purplish-red skinned, an improved Compton's Surprise; Peach Blow, large, but somewhat coarse; Vermont Beauty, and Centennial, a a new round sort. Mr. P. McKinlay, of Beckenham, was awarded first prizes in all the eight classes in which he exhibited, his samples being handsome, and of good size. Of thirty-four dishes exhibited by him, the finest white kinds were International, Climax, Schoolmaster, King of Potatoes, Model, and McKinlay's Pride, a new and handsome kidney. Of coloured kinds, Garibaldi, Grampian, Purple Ashleaf, Blanchard, Salmon Kidney, and Late Rose were exceptionally good. In the various seed trade stands there were some very fine collections of tubers, those shown by Messrs. Carter & Co, being exceptionally so, all the samples being so arranged as to display their size and quality to the best advantage. Messrs. Suttons, of Reading, had fine samples, &c., set up in baskets. Altogether, it will be the fault of the various exhibitors if the visitors do not take away with them the opinion that the many comparatively new kinds now being offered present many marked excellencies over older and less productive varieties.—D.

Vegetables and Water.—It is impossible to grow good vegetables in a dry season without some better means of obtaining and supplying moisture than are commonly met with at present. No doubt better cultivation, greater depth of soil, and a more frequent stirring of the surface with hoe and fork will do much to mitigate the effects of severe drought; but where it is possible to obtain a good supply of water for irrigating purposes, better crops would certainly be obtained. Wherever there is a pond on a higher level, a pipe laid from it through the gardens would give not only a good supply of water, but also the necessary pressure for its distribution; and in such cases the outlay, in proportion to the benefits derived, would be so small that scarcely any valid excuse can be urged for not adopting it. A small hydraulic ram by the side of a running stream or river, where the necessary weight of water could be dammed up, and where the waste water could get away on a lower level, would insure an ample supply. By these and similar means the water that now finds its way through the drains and watercourses to the rivers, and finally to the sea, might be arrested in its course and passed through the parched soil again and again. And not only is this feasible, but it would also pay.—"Field."

An Odd "Discovery."—Dr. Tschamer, of Gratz, says the "Sanitary Record," has discovered that a fungus grows upon the skins of Apples and Oranges, which is precisely similar to the fungus which forms the peculiar germs of infection in whooping-cough. He writes that on Oranges and Apples which have been kept some time may be found dark brown and black specks which, when scraped off, appear as a damp powder. Under the microscope this powder is seen to consist of the spores of a fungus, identical with those of the whooping-cough fungus. Taking two of these specks from the skin of an Orange, Dr. Tschamer introduced them by a strong inhalation into his lungs. The next day tickling of the throat began, which gradually increased, until, at the eighth day, a thoroughly developed whooping-cough set in. Should the discovery be confirmed, there is an additional reason to see that children abstain from eating Apples with the skin on, and from chewing Orange peel, which many are so fond of doing.

A Centenarian Gardener.—On Thursday last, December 6, the Rev. Canon Beadon, rector of North Stoneham, near Southampton, reached the completion of his hundredth year, having been born December 6, 1777. There are still a few who can remember the Rev. Frederick Beadon, as an early exhibitor at the Southampton and Winchester horticultural exhibitions of nearly half a century ago, when such exhibitions were rare and of great importance to horticulturists in those days. Mr. Beadon's name was well known throughout Hampshire, and further as an earnest patron of horticulture, and with a thorough love for plants, as well as possessing a good knowledge of them, and this affection he has retained to the present time. In his library at North Stoneham is to be found a valuable collection of horticultural works, many of them very rare. In the rectory gardens many examples of rare trees, shrubs, and herbaceous plants are to be found, as well as some veteran Camellias against a south wall, and an old Azalea indica alba, out-of-doors, in the American garden, which rarely, if ever, misses having a good head of flowers.—"Gardener's Chronicle."

The Veitch Memorial Prizes.—The Veitch Memorial Trustees, at a meeting held on the 4th inst., confirmed their provisional resolution to place a Veitch Memorial Medal, with a prize of £5, at the disposal of each of the undermentioned societies, for the several subjects specified, it having been ascertained that the exhibitions of 1878 of the respective societies, will take place at a period of the year when these subjects can be produced:—*Manchester*, June 7—For the best specimen Orchid, in bloom. *York*, June 19 to 21—For three bunches of Black Hamburgh Grapes. *Clay Cross*, August 13—For a dish of Peaches and a dish of Nectarines. *Hereford*—For twelve cut blooms of the best new Rose, sent out within the last five years. *Exeter*, August 23—For a collection of twelve kinds of vegetables, distinct. *Brighton*, in June—For one bride and one ball-room bouquet. *Woodbridge*, July 11—For three stove or greenhouse plants, in bloom, distinct. *Reading*, May 23—For three stove or greenhouse plants, in bloom, distinct. *Dublin*, Royal Horticultural Society of Ireland, in August—For three bunches of Muscat of Alexandria Grapes. *Belfast*—For twelve cut blooms of the best new Rose, sent out within the last five years. The prizes are to be open to competition amongst *bonâ fide* gentlemens' gardeners, eligible to compete at the several shows; and the subjects exhibited, are, in all cases, required to display superior cultivation.

QUESTIONS AND ANSWERS.

Weeds on Walks.—My paths are perfectly infested with weeds and Grasses. How can I best eradicate them? Is not a layer of salt or a good sprinkling of brine a good check, and then a coating of gravel over it?—G.

Wintering Pelargoniums.—Will Pelargoniums, if taken up in the autumn, and hung up in a celler, keep alive during the winter, and be fit for planting in the spring? I have read that such is the case, and want to know if it be true. —W. W.

Creeper Covered Fence.—Being compelled to surround an American garden with 115 yards of wire netting, owing to the destruction caused to young trees by rabbits, which this year have been unusually numerous. I should like to make the netting into an ornamental screen, with climbers bearing varied and beautiful flowers in the summer and autumn. The aspect is mild and sunny, and the soil peat mixed with sandy loam. What shall I plant?—Cambria. [Such a trellis will afford a home for many lovely plants, and on it they may be prettily arranged. Japanese Honeysuckles, Tropæolums, Clematises in great variety, Tea and other Roses, and Ivies of different kinds would all be suitable for a trellis, such as that described.

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> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

FALLACIES OF LILY-GROWERS.

IN continuation of my observations on the Reproduction of Lily Bulbs (see p. 505), I would here premise that a well-known Lily-grower has this year headed his Lily Catalogue with the following remark:—"There is hardly a situation in which more or less of the Lilies will not thrive, and yet how rarely do we see them grown." This is true enough, but it raises the important question, "Who is to blame?" Is it the buyers or the sellers—the amateur gardeners, or the professional Lily-growers themselves? There are thousands upon thousands of amateurs in the suburbs of London, and other large towns, who could spare time for the interesting and healthy exercise of gardening in August and September, but who could not spare a day, or even an hour, during the latter part of October; and yet, if they apply to nurserymen, they are told that Lily bulbs will not be ready for lifting before the end of that month! If they apply to Lily-growers in Holland, the answer is even more fallacious, for they are told that the Lily bulbs will not be "harvested" until the end of October; and that the best time for planting is from October to March! Others say, as an excuse for late planting, that Lily bulbs are not fully "matured" before the end of October. Now this is a fallacy, most hurtful to both buyers and sellers. No Lily bulb can be said to be fully matured until it has advanced to a state of perfection—that is, until it is in full bloom; this being its last and highest stage. In October, and onward through the winter months, Lily bulbs can only be said to be maturescent; that is, approaching maturity. We are told by a writer on Lilies, that a Lily will flower better the second year after planting than the first. This, also, is a fallacy; but why? Too late planting! The growth of the first year is checked, while the growth of the new, or succession bulb, is undisturbed; consequently, that bulb blooms well the following year, leaving the parent bulb to decay and die. In some catalogues we are told that Lily bulbs should not be disturbed for three or four years after planting, as patches that have been undisturbed flower much better, and grow taller than those fresh planted. Why? For the same reason as already stated—too late planting in the first instance. It is said by some writers, "that imported Lilies often take a year to recover themselves after being planted." This is a fallacy, founded on the fact that many of those Lilies, after being planted, do not spring up again, but decay and die, leaving to their offspring, the successional bulbs, the duty of growing in their stead, and flowering the following year. There are hundreds of thousands of imported bulbs, which, by the time they are planted (their roots being decayed or cut off for the purpose of packing) have so far lost their vitality that they never again show a sign of growth. This is corroborated by a writer in a contemporary, who says:—"The continued importation of Lily bulbs is surprising. The sale of several thousands in one day by Mr. Stevens has for many years past been an ordinary occurrence. By this time no moderate-sized garden ought to be without them. But what is the fact? They are still unknown, except in the gardens of the few. Where, then, are the bulbs? Why, dead." Another reason why thousands of imported bulbs do not bloom the first year after planting, and that many do not bloom at all, is the fact, that they are not flowering bulbs; that is, they are not fully and sufficiently developed.

As regards the evils of late planting, I am borne out by Mr. Baines (see p. 349) in saying that it would be folly to attempt to transplant the White Lily (Lilium candidum) in October, "as it will then," as he says, "be making active growth; and, if the roots be disturbed, it will have the effect of wholly or partially preventing its flowering next year." This remark holds good with regard to all Lilies, with the exception of a very few late-flowering ones. We see the green tufts of leaves shooting up from the White Lily bulbs before October arrives, and we can therefore imagine the activity that must be going on beneath the surface of the soil. With regard to other Lilies, we cannot see this; but experiments can lay open the mysterious underground workings of Nature, as plainly as the green tufts of leaves can be seen by the naked eye. At the end of June, 1876, I lifted and transplanted a number of White Lilies, and they bloomed as well during this last summer, if not better, than those which had not been disturbed. At the end of October, I lifted and transplanted a few bulbs each of five different sorts, including the White Lily. Only three stems, out of all I had transplanted, came up this last season, and even these did not show the slightest signs of bloom. So much for early and late planting. The method of reproduction is different in different plants; but, as a general principle, it may be stated that the parent bulb is charged with the function of liberating germs or seed-buds, which vegetate as soon as brought into a condition fitted for their growth; and this is in general, about eight or ten days after the flowers of the parent bulb have faded. It is very soon after this time that we are enabled, by experiment, to observe the phenomenon called "three generations in one;" that is, the parent bulb, now destined by Nature to perish; the new bulb within it, which is destined to bloom next summer; and the seed-bud within the new bulb (now cut open to observe it), which is destined to flower the year after that. From this it will be seen that a Lily is not an annual, nor is it a biennial, but a part of both, two years comprising the period of its existence from birth to death; it is certainly not a perennial, as some have called it. These seed-buds, as soon as they can be discerned, even by the aid of a magnifying glass, can, by a simple, though necessarily protracted, course of experiments, be followed in their growth distinctly until they become flowering plants, leaving no room whatever for those who are otherwise biased or prejudiced to theorise on the subject. There are some, however, who would rather indulge in mere theory than take the trouble to go an inch under the surface of the ground. A Lily grower, writing in the "Gardener's Chronicle," says "the stems in a healthy plant are generally from 6 to 18 in. in length, before the roots are emitted from the base of the bulb." This is clearly a fallacy, and very much calculated to mislead; for, on the contrary, the roots of the new bulb are generally 3 or 4 in. in length, before the stem is ½ an in. above the apex of the bulb. It is then, at the time above-mentioned, namely, about eight or ten days after the petals have fallen, when lifting and transplanting can be done with the best prospect of a successful bloom during the next season. Nature has designed that there should be a reciprocity in action between the roots and the bulb. But man, thoughtlessly, or unknowingly, deranges all this. The new bulb, at this time, derives its principal support from the roots, as the parent bulb is now dead, or dying. At this time, also, the bulb and its roots approach nearer to a state of quiescence than at any other succeeding period of their growth. If, therefore, the roots be as numerous, as strong, and in as vigorous a condition as they are in October, the bulb itself and all that it contains would be forced into an unnatural state of excited action, so much so, as would soon entirely ruin the plant. On the other hand, by lifting and transplanting, indiscriminately, all bulbs in October, man destroys the reciprocity of action in the plant. The roots are disturbed, the flow of nourishment is checked, the damage, in fact, is as complete as if the young stem itself had been cut out of the bulb; having the effect, as Mr. Baines distinctly points out, "of wholly or partially preventing its flowering next year." There are some late blooming Lilies that may be transplanted in October; but this should not be taken as a general rule. The catalogues of Lily-growers show us, that, with a well-selected collection, Lilies may be had in bloom from June to October, embracing a period of five months. Here, then, we have a scientific guide, if we choose to follow it. It is a fact, which science has placed beyond a doubt, that, if Lilies do not all bloom at the same time, they should not be all transplanted at the same time. Beginning, therefore, eight or ten days after the Lilies which flower first, have shed their bloom, we go on lifting and transplanting, from time to time, until October; during the most agreeable part of the year, and during a period, too, when amateurs have a good deal of spare time on their hands, which might be turned much to their own advantage, and, at the same time, to the advantage of our professional growers.

We now come to another fallacy, one of the most disheartening with which amateurs can have to contend; but as time and space both forbid my enlarging on the subject at present, I shall simply throw out a few hints for further consideration. In an advertisement which I have lately seen, a Lily bulb importer (not a nurseryman) announces that he expects shortly a shipment of Lilium auratum from Japan, and offers the bulbs "at the following prices:—Sizes No. 1, 6d.; No. 2, 1s.; No. 3, 1s. 6d.; and No. 4, 2s. each." Here we have no less than four different sizes of one sort of Lily offered to amateurs, without any guarantee whatever that they are flowering bulbs; I do not blame the importer, as it is a mere matter of business with him, and I know that he could not give a satisfactory guarantee, if he were ever so willing, that the bulbs offered would bloom. With a shipment of Potatoes we might be able to judge what they would be worth, but with Lily bulbs it is altogether different. It is within the bounds of possibility, that of the whole shipment there may not be a tenth part flowering bulbs, and these no one could point out. In fact, no man can tell this but he who overlooks and takes an interest in his Lily department. He sees his stock in bloom, and knows, or ought to know, that every bulb that blooms is at that time the parent of a new bulb—perhaps twin-bulbs, but rarely triplets—that will bloom the next season. But even he can go no further than this with certainty. Before the parent bulb bloomed for the first time, he could not have told that that was a flowering bulb. It has been supposed, that if a bulb shows a portion of the parent stem attached to it, this ought to be sufficient, but this is not an infallible test, for every bulb has a parentage even in a two or three-year-old bed of offsets, and consequently every bulb, large or small, flowering or non-flowering, has sprung from the side of a stem, some small offsets of a first year's growth, on the outer edges of some bulbs, excepted. This being the case, we need not be so much surprised that a vast number of Lily bulbs do not flower the first year after being planted. As regards imported bulbs, they are only fit to be planted out in nursery beds. The many that will die must die, and those that flower will (not always) leave behind them successional flowering bulbs to fill blank places in the ornamental beds or borders. I had written thus far, and was about to close, when my copy of The Garden was placed in my hands. From it I am glad to learn that men like Mr. Frank Miles have taken this subject in hand. We may now hope to see, ere long, the underground history of the Lily made plain, clear, and as intelligible as that part which grows in the light of day. Dunedin.

Retinospora ericoides a Misnomer.—Is not Mr. Syme (see p. 404) mistaken when he charges M. Carrière with saying this "is a native of Japan"? I have too high an opinion of M. Carrière to believe he would ever say as a fact, what he could have no knowledge of. In these matters it is best to quote the exact language, with references, of the author charged with the statement. That the plant is simply Thuja occidentalis, and nothing more, and has no relation whatever to Japan, is well-known to every intelligent American, by whom not only the fact, but the biological law which induces the dimorphism, is understood. Those who wish to pursue this study further will find the explanation in the "Proceedings of the Chicago Meeting of the American Association for the Advancement of Science"; and later, in the excellent "Book on Evergreens," by Mr. Josiah Hoopes. In branches which I have from the same plant, the upper portion is the normal T. occidentalis; the lower, Retinospora juniperoides; the dingy-brown base of the tree forming a striking contrast with the green upper part. It does not get brown till cold weather sets in, of which we have had none yet. It seems strange to us over here that our friends in England should be so mystified over these things, which are old to us in America.—Thomas Meehan, *Germantown, Philadelphia.*

Goodyera Rollissoni.—I cannot agree with Mr. Speed's assertion (see p. 536) respecting this plant. It is certainly not G. Veitchi, but an introduced plant, bought of M. Linden, in almost a dried state, under the name of G. velutina. The plant, however, figured by M. Van Houtte under that name is totally distinct, and this circumstance, combined with the fact that it was an introduced plant, and different from any other species, gave rise to the name under which it was distributed by us. Had it been one of the Chelsea hybrids, Mr. Dominy is far too much respected here to be deprived of the slightest honour that may belong to him. In G. Veitchi the leaves are bronzy-red, ribbed with silver lines; in G. Dominii the leaves are bronzy-black, striped lengthways with white lines, and transversely netted with fine lines of the same colour. Our plant is figured by M. Linden under the erroneous name of G. velutina.—W. Gower, Manager, *Messrs. W. Rollisson & Sons, The Nurseries, Tooting.*

Tropæolum speciosum in Warwickshire.—Having made several attempts to grow this plant without success, it may interest your readers to know how I have succeeded, this season, in obtaining a very fine show of bloom. In the first week in April (the best time for planting), I had given me two small tubers, which I broke into bits, about ½ in. long, and laid them on silver sand, in a stove, for a few days. When I could see them forming eyes I had a border prepared for them in the following manner:—It was dug out one foot deep and one foot wide; two inches of crocks were placed in the bottom for drainage, and then I filled up with a mixture of peat, sand, and charcoal, making all solid by treading. I then planted each bit of tuber about two inches deep and surrounded them with a little silver sand; they soon began to grow, and, after that, they were never allowed to get thoroughly dry, and the result has been a beautiful display of this Tropæolum all the autumn.—Frederick Perkins, *Leamington.*

Panicum variegatum as a Pyramid.—It may not be generally known that this can be grown as a pyramid; but it is quite possible to grow it in that way if desired. Plants for such a purpose should be struck from cuttings taken in spring, and inserted in a compost consisting of equal parts of leaf-mould, peat, loam, and sand, and plunged in a good bottom-heat. When struck, the strongest plants should be selected and potted in loam and leaf-mould, with the addition of a little peat and sand. In the centre of the pot should be inserted a stake, up which the leading shoot should be led. The side shoots should be pinched in a little, and as soon as the plants have begun to grow, each shoot should be trained up the stake in succession until it is found that the plant is large enough. The leading shoot should then be stopped, when it will throw out side shoots in abundance. Thus treated, an excellent pyramid will be the result, fit either for indoor decoration, or for other purposes. Plants 3 ft. through, and proportionately high, may be grown in this way.—T. W. S.

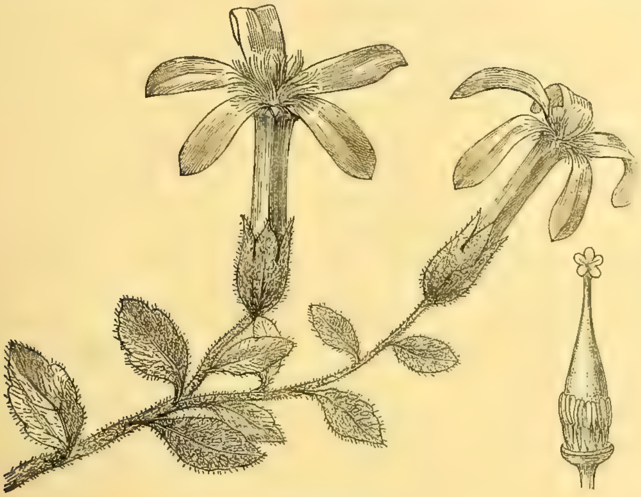
Pelargonium inopinatum.—In editing the new edition of Maund's "Botanic Garden," shortly to be published, on reaching the last page but one, I find a Pelargonium mentioned under the above title (certainly a specific name new to me) that, on an examination of the accompanying plate, somewhat startled me, by the close relationship which appeared to exist between it and the perfectly modern breed of Pelargoniums, of which we may take Captain Raikes and Queen Victoria as typical representatives. On referring again to the letterpress, I find its popular title to be Willmore's Surprise, a name which, though familiar to my mind, does not appear to associate with it the special form of plant there figured. The description of its origin as a garden hybrid—"found by Mr. Willmore, of the American Nurseries, Birmingham, growing amongst a bed of Hollyhocks, where it had stood the winter," and supposed to be an accidental mule between those plants and some unknown Pelargonium—at once excited my curiosity; not for one moment that I imagined the probability, or even the possibility, of such a hybrid origin; but in the figure we have plainly and pronouncedly stamped all the peculiarities which belong to the new race of Pelargoniums to which I have just alluded. We have irregularity in the number of the petals, and also in their marginal outline; the sepals are irregular in shape, the two or three outer ones having a marked tendency to become foliaceous; and the stipules are also large, foliaceous, and deeply notched. These characters are all well represented in the figure, and they are the distinguishing characters of that now deservedly popular section of the Pelargoniums to which I have alluded. Has any of your readers this old species in cultivation at the present time? Or can any one favour us with the origin of this special section of the genus Pelargonium?—Jas. C. Niven, *Botanic Garden, Hull.*

Christmas Roses.—Mr. Ellacombe notes (see p. 512) that Christmas Roses in his neighbourhood are quite a month in advance of the usual time. Allow me to state that this is also the case on the Undercliff of the Isle of Wight. At St. Lawrence they are flowering freely and in great perfection this week.—H. W. H.

Hardiness of Omphalodes Luciliæ.—I am able to inform your correspondent (see p. 547) that Omphalodes Luciliæ is perfectly hardy, having grown it for many years fully exposed in a bleak situation on the Cotswold Hills. It is readily increased by cuttings or seeds.—Jas. Atkins, *Painswick.*

CYANANTHUS INCANUS.

This lovely little plant will be found to form a pleasing addition to our list of choice rock plants, being dwarf and neat in habit. It differs considerably from the only other species of the genus in cultivation, viz., C. lobatus, which, too, ought to have a place in every select collection. If possible, C. incanus is more floriferous than C. lobatus, and, like that species, it should be planted in a dry, sunny, well-drained position, as if the situation be too damp, the fleshy root-stock is liable to rot. It is a good plan even to place something over the plant during the resting season. The flowers are not so large as those of the other species, but they are certainly more charming in colour, which is enhanced by the white tuft of sericeous hairs in the throat of the corolla. The plant from which the accompanying figure was taken, was raised from seed sent to Mr. Gower, at Messrs. Rollissons', of Tooting, from the higher hills of Sikkim. There are other still more beautiful species yet to be introduced from the Himalayas. J. T. Riches.


Cyananthus incanus.

Barnards' Slow-combustion Stoves.—Messrs. Barnard, Bishop, & Barnards, well known for their manufactures of garden implements, trellises, &c., have lately been producing, at their Norwich works, a stove possessing very good qualities. It is claimed for it (1) That it is very slow in combustion, from the fact of its being constructed with a solid fire-brick bottom, which, with the back and sides (also of fire-brick), gives out considerable heat. (2) As the fire does not come in contact with the iron (with the exception of the front bars), no gaseous smells are emitted. (3) When used with a blower, they are a certain cure for a smoky chimney. (4) The prices are low, and the designs new and elegant. [We have tried these stoves, and find they deserve all that is claimed for them. From a horticultural point of view, they are not without importance, as the combustion is such that much less smoke is carried up the chimney than by the ordinary grate. The heat is thrown into the room effectively, and the look of the fire more cheerful than that of the ordinary grate.]

A Free Blooming Pompone Chrysanthemum.—I have just cut down some plants of a Pompone, called Précocité, that have been in bloom since July last. It has a very full, good flower, and although I have grown it some time, under the above name, it differs in many respects from another kind that is in cultivation under the same name. The flowers of my plant are almost as large as those of Madle. Marthe, and the same in shape. I have cut constantly from it during the past five months, and when I cut it down for the purpose of getting stock, it was still blooming merrily, and gave every promise of continuing its floriferous character much longer. I consider it a perfect gem, and decidedly distinct from the Précocité of some growers. While on this subject, I may allude to the bad condition of the nomenclature of the summer blooming Pompones, which is mixed up in indescribable confusion, the Golden Button of some being the Précocité of others and Hendersoni of some one else, while we have Dr. Bois Duval, Scarlet Gem, and lastly Little Bob (sent out two or three years since) synonymous. Although I have many of the summer blooming sorts, I cannot recommend them all, some of them being veritable rubbish, and totally unnecessary, considering the time of year at which they bloom, while others, such as the above-named Précocité, Hanum, Madame Picoul, and Madame Eugènie Domage, are perfect gems.—F. T. Davis, *Plumstead Common.*

FROM KEW.

Last week we inadvertently stated that Calliphruria Hartwegi was the only known species of the genus. There is, however, another one, also from New Grenada. Last year Mr. Baker found that the plant, which had in many gardens passed as Eucharis candida, was not an Eucharis at all, but a Calliphruria, which he named C. subedentata. In the Palm-house, there is at present to be seen in flower a very beautiful new Bromeliad, from Brazil, Bilbergia macrantha. The broad, concave, glaucous, spinescent leaves are transversely marked with whitish bars, and overlap each other the greater part of their length, so as to form a sort of cylinder, from out of the top of which springs the gracefully-drooping inflorescence. The flowers are large, the outer perianth segments being bright pink, the inner ones glossy purple, and the anthers golden yellow; the large pink bracts in themselves are exceedingly showy. As a species, its nearest ally is B. vittata, but it is perfectly distinct from, and much superior to, that species.

A Cape Irid, Moræa edulis, has pretty blue flowers, the three sepals bearing a yellow blotch at their bases. This plant was introduced to this country towards the close of the last century, and is figured in one of the early numbers of the "Botanical Magazine"; it, however, seems to have been, until very recently, completely lost sight of. This may be seen in the cool end of the new range. Thunbergia Harrisi is a very splendid, free-flowering climber, from the jungles of Rangoon and Moulmein; it has large blue flowers, and is one of the most handsome of stove climbing plants. Illicium anisatum is in bloom in the cool compartment of the Economic-house. In many parts of the south and south-west of England this plant will succeed in the open air, if care be taken to choose sufficiently-sheltered spots. The pretty white flowers are exceedingly fragrant. In China and Japan this species is a small tree, attaining a height of about 20 ft.; it is cultivated in China, where its aromatic fruits are much used for seasoning, &c. In Japan, the tree is always planted near the temples, and garlands made of it are placed before their idols. A good deal of Star Anise is imported to Europe, and is much used for flavouring spirits in France, Germany, and Italy.

In the Orchid-house are some strong specimens, which will very soon be in bloom, of the largest-flowered of all Orchids, Angræcum sesquipedale. Thirty-five years after the existence of this "Prince of Orchids" was known, it was introduced to this country by the Madagascar missionary, traveller, and historian, the Rev. W. Ellis. He says that it appeared to grow most frequently where there was plenty of light and air, the roots often running down the side of the tree on which they grow 12 ft. or 18 ft. or more. It does not grow in the moist and thickly-wooded parts of the island, but generally on the straggling trees along the edges of the forest, or in parts where the trees are only thinly spread over the country. The very long-spurred, ivory-white flowers have an odour somewhat like that of the white garden Lily. Lælia superbiens has three long flowering stems. In 1839 Skinner discovered this in a Guatemalan village, planted by the Indians in front of their doors. In November of the following year he made an expedition in search of its true habitat, and found immense quantities of it in the gullies near the town of Comalapa, the finest specimens growing out of crevices in the rocks, and sheltered from the north winds. Some of them had pseudo-bulbs 22 in. long, and flowering stems 12 ft. long, bearing upwards of twenty flowers. The sepals and petals are lilac-purple; the waved and crisped lip is yellow, margined with deep purple, the lower half streaked with purple. A very handsome Mexican Lælia (L. anceps) will be in flower in a few days. Dr. Lindley says that this species is equal in beauty to any of the Cattleyas—that it has a far more graceful growth, in consequence of the length of its slender scaly stem, from the point of which the flowers swing—and that it diffuses an agreeable perfume. It has blooms of a bright rosy-purple colour.

A fine plant of Luculia gratissima may be seen in the greenhouse (No. 4); there can scarcely be a more beautiful object than a good specimen of this Nepalese tree covered with its large corymbs of rather fleshy, rose-coloured, and exceedingly fragrant flowers. The earliest-flowering, and one of the prettiest of the Australian Acacias, is A. platyptera, with its numberless globular heads of orange-yellow blossoms. There are about 450 species in the genus Acacia, of which nearly 300 are peculiar to the Australian Continent, and of these by far the greater number are phyllodineous species, that is, species in which the true leaves are suppressed and their places taken and functions performed by the highly-developed petioles or leaf-stalks. In A. platyptera the phyllode is not so highly developed, being sometimes reduced to a mere tooth of the winged expansions of the stem and branches. The rich scarlet flowers of Brachysema lanceolata (of which there is a good example in the Winter Garden) contrast admirably with the leaves, which are bright green on the upper and beautifully silky on the lower surface. This plant furnishes the cool conservatory with a colour rather difficult to find during the dull winter months. The ternately-compound leaves and the terminal panicles of white flowers of Nandina domestica are very pretty. Travellers state that it is to be found in nearly every Japanese garden. It will do outside in the south of England in tolerably sheltered nooks.

NOTES OF THE WEEK.

New and Rare Shrubs in Ireland.—Hamamelis arborea and Azara Gillesi, two very interesting shrubs, are now being sent out by Messrs. Rodger, McClelland, & Co., of the Warrenpoint Nursery, Newry, where a very rich collection of flowering shrubs is grown. They have also a stock of Lambertia formosa, a rare and beautiful rose-coloured flowering shrub, and Podalyria (two species) are likewise offered by the same firm. It is with great pleasure we notice so much intelligent energy in a provincial nursery. The supplemental list of hardy shrubs recently issued by Messrs. McClelland is well worth the attention of all interested in that direction.

Finely-flowered Lapagerias.—We have a note from Mr. Booth, gardener to Mr. Titus Salt, at Milner Field, concerning his Lapagerias. It may be remembered that they were so fine in 1875 that a woodcut representation, showing the profuse way in which they flowered, was given in The Garden (see Vol. VIII., p. 294). The crop of flowers has been equally great this year. "I have cut," says Mr. Booth, "thirteen sprays this season, containing from twenty to thirty-five blooms on each spray, two and four at a joint, and on one spray there were fifty-seven good blooms, all open at one time, in a length of 31 in., nine blooms being at one joint." This was our variety which we have grown for years under the name of rubra, and which is by some called rosea superba.—Fisher, Holmes, & Co., *Handsworth Nurseries, Sheffield.*

Poinsettia pulcherrima.—I have nearly 300 of this now in full bloom in 5-in. pots, the whorls of coloured leaves averaging from 12 in. to 16 in. in diameter, on stems from 6 in. to 14 in. in height, and well furnished with foliage. These plants are the produce of cuttings struck in July and August last.—R. Nisbet, *Aswarby.*

Orchids and Palms in Winter.—By the arrangement of well-flowered plants of Dendrobium nobile, Lady's-slippers, Calanthes, Odontoglossums, and the beautiful Saccolabium giganteum amongst Palms, Ferns, and Grasses, a fine effect has been produced in one of the houses in the Holloway Nurseries. All the plants mentioned are of easy culture, and at this time of the year, when outdoor gardens are comparatively flowerless, such effects might with advantage be more commonly met with than they are. A specimen of Cymbidium Mastersi in the same house is also finely in flower.

Aphelandra fascinator.—This new Aphelandra promises to be one of the most effective and useful stove plants which can be grown for flowering in winter. It has velvety green leaves, with broad, whitish veins, and its flowers, which are brilliant scarlet, are borne in large pyramidal trusses. Its wood is of a softer character than that of others of the genus, and on that account more bushy specimens are likely to be made of it. We saw it in flower the other day in Messrs. Rollissons' nursery at Tooting.

Griffinia hyacinthina.—Wherever Amaryllids are grown, this Griffinia should find a place. It flowers all through the dullest months of the year, and has a colour possessed by few winter-blooming plants. Though an old plant, it is not nearly so often met with as it ought to be. Intermixed with Crotons, Ferns, and other fine-leaved plants, its large heads of waxy blue and white flowers have a striking effect. In a cut state, too, the flowers last for a considerable time in good condition. It is now finely in bloom is Mr. B. S. Williams' nursery at Holloway.

The Arnold Arboretum.—A tract of land at Jamaica Plain, Mass., of about 130 acres, is assigned by Harvard University to the Arnold Arboretum, of which Prof. Chas. S. Sargent is the able director. It being desirable to have the land laid out to the best possible advantage, and the income from Mr. Arnold's bequest not being equal to any extraordinary expenditure, Mr. Fred. Law Olmsted, so favourably known as a landscape architect, volunteered his services for the work, and a few of the wealthy gentlemen of Boston and vicinity have volunteered the few thousands needed to pay the surveyors and draughtsmen. Thus this important preliminary work will be accomplished without drawing upon the proper income of the fund, and in a manner so thorough that it cannot fail to be of the greatest value to the Arboretum—an Institution, to the development of which arboriculturists and lovers of trees, not only in America, but abroad, look with the liveliest interest.—"American Agriculturist."

We are pleased to announce that M. Alphonse Lavallée has been nominated Chevallier of the Legion of Honour by the President of the Republic. Few men have done so much for horticulture, and particularly towards enriching our collections of trees and shrubs.

Tree Planting at Woolwich.—Some thousands of young trees have been received at the Royal Arsenal, Woolwich, from the Botanic Gardens at Kew, and are being planted in rows by the sides of the avenues and workshops, and grouped in plantations wherever there are plots of ground available. In a few years the appearance of the Royal Arsenal will be much improved by these trees.

An Opportunity.—At a meeting of the Public Parks Committee of the Town Council of Edinburgh the other day, a remit from the Lord Provost's Committee as to a legacy bequeathed by the late Mrs. Ross, for the purpose of forming a rockwork in West Princes Street Gardens, was considered, the Committee recommending acceptance of the sum, and meantime instructing Mr. M'Leod, superintendent of the gardens, to consider as to a suitable site and the cost, and report.

Geonoma princeps.—This is a handsome and distinct South American Palm of upright and compact habit of growth, having sturdy fronds and broad lance-shaped leaflets. When better known it will, no doubt, be largely used for general decorative purposes. It was awarded a first-class certificate, the other day, at South Kensington, where it was shown by Mr. Bull.

Impatiens Jerdoniæ.—This, though an old plant, is seldom met with. It might, however, be grown with advantage in pans or terra-cotta baskets for winter flowering. Its dwarf habit and bright scarlet and orange blossoms, when seen in masses, are very effective, especially when associated with light-coloured flowers. It was shown in good condition the other day at South Kensington.

Hæmanthus albo-maculatus.—This is a white-flowered species with yellow anthers, which, in addition to the beauty of its blossoms, has bright green leaves prettily spotted with white. It is now finely in flower in the Pine-apple Nursery, Edgeware Road, where numbers of the better kinds of Bouvardia may also be seen in bloom.—J. F.

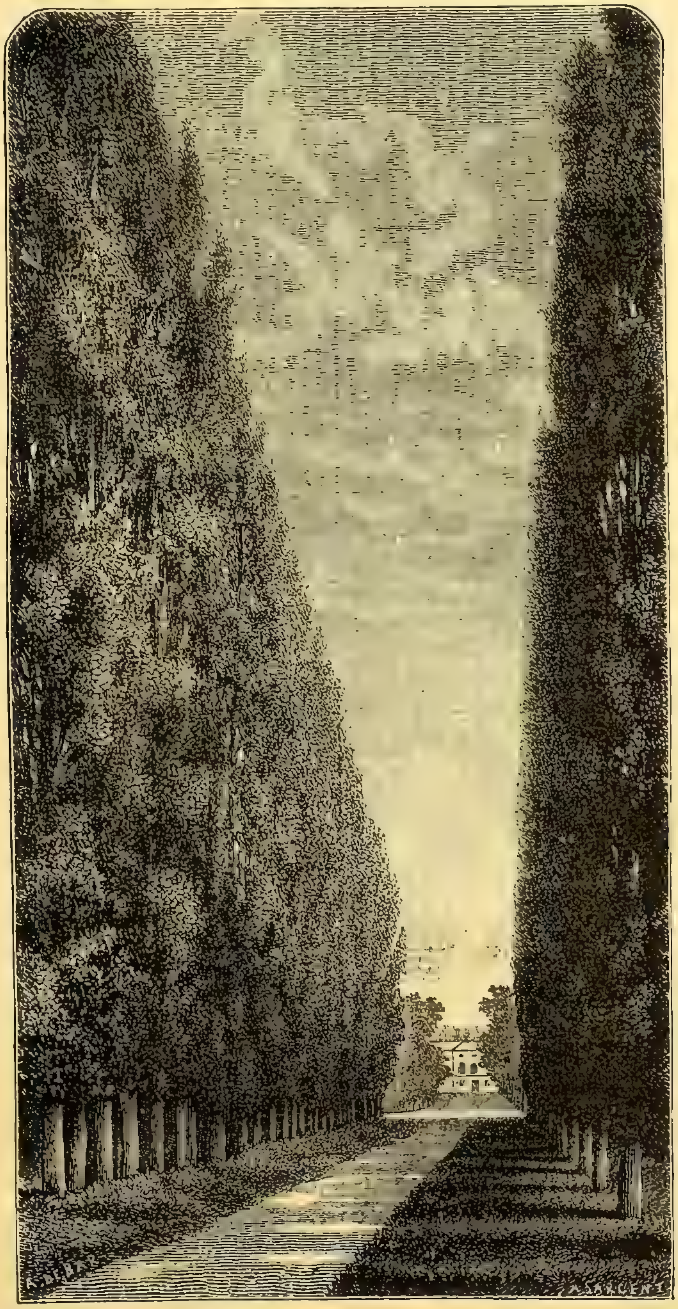
Indian Strawberry Naturalised in Cornwall.—We have received specimens of the Indian Strawberry (Fragaria indica), from the Hon. and Rev. J. T. Boscawen, with a statement that this plant is abundantly naturalised near Penzance. Further particulars would be of interest; the plant is a native of Nepal, and has been cultivated in English gardens. It is a creeping plant, with wide-spreading, rooting runners, usually three-lobed hairy leaves, and axillary yellow flowers, which are surrounded by a large leafy calyx; these are succeeded by small, red, succulent, tasteless fruits. This Strawberry may be usefully employed on rockwork or in hanging baskets, and is also a good balcony creeper.

The Ghent Show for 1878.—We have received the schedules of the tenth quinquennial International Exhibition which is to b. held in Ghent during the first week in April of the coming years The programme of this Exhibition is very comprehensive. It is divided into three sections—namely, plants, for which 274 classes are provided; arboriculture and the culture of market plants and fruit; also arts and industries, making a total of 321 classes. The prizes consist of objects of art, gold, silver-gilt, and silver medals. The gold medals alone number 117. We can only notice a few of the chief prizes. A gold medal is given by the King for fifty Azalea indica, the Queen being the donor of a similar prize for twelve Tree Ferns. A gold medal, value five hundred francs, is provided by the federation of the Belgian horticultural societies for forty Palms, and an object of art of the same value is offered by the President of the Society, the Comte de Kerchove, for seventy-five plants in and out of flower, the contribution of the Comtesse de Kerchove being an object of art value three hundred francs for 150 Hyacinths. Gold medals of the value of 250 francs are offered by the members of the Council of Administration to nurserymen and amateurs for twenty Orchids, also for thirty Dracænas and fifty Rhododendrons. We note also that the English Van Houtte Memorial Committee provide two prizes for Belgian exhibitors of six stove and greenhouse plants of distinct genera, in the form of objects of art of the respective value of 250 and 125 francs. Other medals are offered for horticultural buildings, trellises, and three are to be given for plans for laying out a garden of from three to five hectares (the hectare is about 2½ acres). This Exhibition promises to be without doubt the largest and best show ever yet held there.

TREES AND SHRUBS.

AVENUES.

It is desirable that every park and every town should possess some feature which may distinguish it from others, which, beautiful in itself, may be an object for a walk or drive, and upon which the memory may dwell with affection in absence. There is no more certain way of effecting this than by a well-judged method of planting trees; and it will be found desirable, in order to concentrate the effect and to obtain character, that at certain places in the landscape and certain streets in the town, one particular tree should predominate. How pleasantly our imagination is stirred by the mention of the Horse Chestnuts at Bushy Park, the Linden trees of Berlin, the Elms of Windsor, and the Oaks of Stoneleigh! Great beauty is obtained by the disposition of trees in an avenue, the essential character of which is that it should be composed of single species. In no way are trees displayed to better advantage; they gain character by their fellowship, and the attention is at once arrested by the uniformity, which, if it were not confined to certain limited parts of the ground, would become intolerable. The well-ordered ranks of stately Poplars, composing the avenue depicted in the woodcut, give a striking and unique effect to a flat and otherwise featureless piece of ground. Their grandeur and formality impose upon the imagination in a way which would be quite absent if the road were bordered by ordinary masses of mixed planting, or by isolated groups; but the effect to be produced by an avenue, such as this, should be strictly localised. The contrast should be sharply defined between the formal lines of stately trees and the open park or gloomy, tangled wood. Another principle not to be lost sight of is that there should be an object—not necessarily visible—at either end of the avenue. Let it not be purposeless, or half the sentiment is lost. The serried lines should usher the visitor from the entrance gate to the mansion, or from the mansion to the garden; or, in a town, let the avenue lead to the river, the cathedral, or the central square. Then the object of the formality will be obvious. Salmoniceps.



An Avenue of old Lombardy Poplars.

CHINESE CYPRESS (GLYPTOSTROBUS SINENSIS).

In searching after materials for his work, the landscape gardener naturally and especially seeks peculiar and varied forms and colours. He thus acquires the ability to compose groupings and effects more and more artistic and attractive. One of the most peculiar forms and exquisite colourings within reach of his employment is that of the Glyptostrobus sinensis, sometimes called pendulus, a near relative of, and yet strangely unlike, our Southern Cypress (Taxodium distichum) the generic name of which it should properly bear. Unroll the curious thread-like leaves of the Chinese species, and you have the American form, and may even at times discover this unrolled form naturally produced on the Glyptostrobus itself, a clear case of reversion to a parent type. The Chinese Cypress has long, naked, deeply-penetrating, rather than wide-spreading, roots, and, as far as we know, none of the tendency of its American relative to develop knobs or knees from its larger roots. Whether it would not produce the same curious monstrosities, if grown to a great age in swampy bottoms, may be fairly questioned; as yet it has apparently never been so tried. The wood is extremely light, and the straight, shaft-like stem is enveloped with a delicate flaky bark of the softest brown, according finely with the dainty, aristocratic nature of the tree. Far up on the fine points of its naturally lofty stature, commence the smallest branches compatible with such a habit. These branches, surrounding the tree in graceful and symmetrical curves, cause the pyramidal form to manifest itself at once and remarkably. Indeed, its tendencies seem altogether aspiring. The branches erect themselves at an acute angle with the tree, and the very leaves extend upward along the branches until their slender sprays droop a little just at the tips, thereby establishing a certain claim to the term pendulous usually added to its other names. But the most remarkable portion of its appearance is the colour and construction of the foliage; presenting a light, soft green, like unto no other colour seen among trees, it pleases and rests the eye all the more because of the strongly-defined outline ever present. No feathery, shifting cloud of leaves, or fringed and tasseled shrub; it is simply a calm, beautiful tree, scarcely waving before the passing breeze, and yet elegant and graceful as the trembling Birch.

The construction of the leaves is curious, being rolled in on themselves until they seem like delicate cords, rather than feathers, which the leaves of the American Cypress suggest. It is difficult to explain why so beautiful a tree as that we have just described, does not meet with more general acceptance. Two reasons, however, may be offered, viz., difficulty of propagation, and difficulty of transplantation. The soft, peculiar wood does not readily unite with scion or bud under ordinary methods of propagation; layers cannot be made easily or in quantity, and seedlings will continue to sport and lose more or less the typical form, and assume that of the American Cypress. Transplanting is often rendered unsuccessful by the long, naked tap-root and light wood. Nurserymen would do much towards its wider employment by frequent root-pruning and transplanting to develop more abundantly the small fibres that the roots are somewhat chary of producing under careless treatment. Ill-founded notices respecting its hardiness in particular regions may have also proved a bar to its wider distribution, and the late appearance of its foliage in spring, when people would naturally notice it in the nurseries, has not extended the circle of its acquaintance. The peculiar value which Glyptostrobus possesses for the landscape gardener lies, after all, in its very narrow, spire-like form. As a single specimen on the lawn, its effect is unique and striking; but in a group of different trees, where the artist desires to combine round and pointed forms for the most varied and picturesque effects, it becomes invaluable. The graceful variety of groups of deciduous trees is especially enhanced by its presence, because such trees are not often pyramidal or pointed. Let us hope that the growing appreciation throughout the country for choicer and more exquisite trees will bring this variety of Cypress into more general notice and employment.—Samuel Parsons, in "Country Gentleman."

Tree Altitudes.—A comparison has lately been made by M. Goppert of the woody growths on the highest points of the earth's surface in various parts, reaching to 17,000 ft. above the sea. The results are these:—(1) Over the whole earth the Coniferæ appear as the last trees, or those highest in position, represented by Abietinæ in the northern hemisphere, and Cupressineæ and Taxinea in the southern, *e.g.*, in Chili. (2) As bushes, this great Natural Order plays the same *role*, Abietineæ in the northern and Cupressineæ in the southern hemisphere. (3) Along with them only the Ericaceæ are to be placed, and they, indeed, far exceed them in space occupied, owing to the large associated growth of the individual species, such as Rhododendreæ and Baccinieæ in the northern hemisphere, and Thibaudia and Befaria in the southern. (4) As a quite foreign element to the rest of the high Alpine flora, there occur in the South American Andes Compositæ as trees and shrubs.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Moving Trees.—A very interesting operation in moving trees is being carried out at Gunnersbury—an old avenue of Oaks being removed, owing to alterations in the estate.

A Weeping Wellingtonia is offered by Messrs. Carter & Co., distinct from the normal form, graceful in appearance, and likely to prove of value for single specimens on lawns. In districts where the ordinary form thrives freely, this is worth a trial.

Robinia dubia.—This is said to be a hybrid between the common Pseud-Acacia and P. viscosa. It forms a good sized tree, having very short spines, and pale rose coloured flowers, this kind is frequently named hybrida umbigua and echinata in nursery catalogues.—G.

Black Alder.—What is usually known as the "Black Alder" is not related to the Alder family, but is a Holly with deciduous leaves—the Ilex verticillata of botanists, and was in former times classed with the genus Prinos. Beautiful as this shrub is, when in full bloom, during May and June, it is yet more attractive in autumn and early winter, covered with bright-red coral-like fruit. The flowers are arranged in dense clusters along the stems, and are pure white in colour.

The Eucalyptus Fire-proof.—The merits of this tree would seem, from some statements made at a meeting of the California Academy of Sciences, not to be confined to its absorptive properties, and its value in combating malaria. Eucalyptus shingles are said to be fire-proof. A tree of this species was exposed to the fire in San Francisco which occurred in 1876, and it is still in a flourishing condition. All varieties of the Eucalyptus are stated to be possessed of this valuable quality.—*Lancet.*

THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

(Continued from page 540).

China-Japan Region.

General Description.—This region, as has already been observed, is extremely rich in gay-flowered shrubs, and evergreen shrubs and trees of the Euonymus, Camellia, and Arbor-vitæ families. It is only the vegetation of the northern half, from about 30° N. lat. northward, and the higher mountains of the other part, that is hardy, even in the southern and western parts of the kingdom. In consequence of the dense population, and the necessity arising therefrom of cultivating all the available land, the really indigenous and wild plants are almost restricted to the mountains and remote parts. But both the Japanese and Chinese are skilful gardeners, and cultivate many of the numerous, useful, and beautiful vegetable productions of their respective countries. They have also raised numerous garden varieties of various plants, many of which have been imported into this country. It is chiefly during the last fifty years that the greater number of the species enumerated in the following lists have been introduced, though some few, and those chiefly quite familiar plants, were introduced much longer ago. Thus, Kerria japonica was, it is recorded, introduced in 1700; Camellia japonica in 1739; Hydrangea Hortensia in 1740; Salisburia adiantifolia in 1754; Chrysanthemum in 1764; Aucuba japonica in 1783; and Euonymus japonicus in 1804. The mottled, laurel-like leaves of the variety of Aucuba originally imported must be known to everybody. This is a female variety, and until within the last few years no males were in this country; but now the seedling varieties are becoming as numerous as those of Euonymus. The latter is one of those plants that rarely fruit in England.

A Japanese Sedum (S. spectabile).

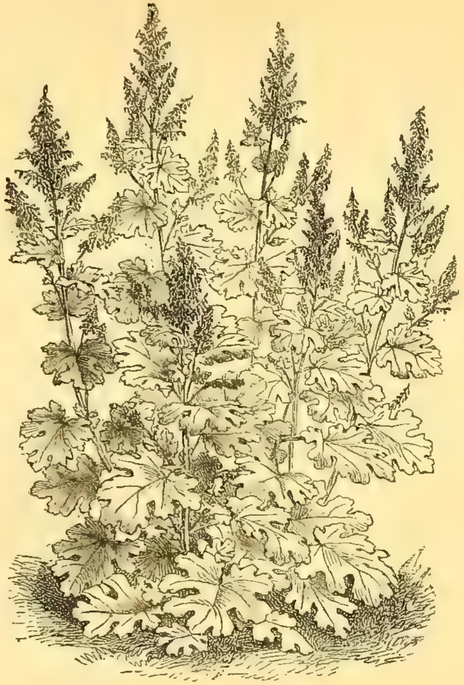
Garden Plants from the China-Japan Region.

Deciduous Shrubs or Trees with Showy Flowers.

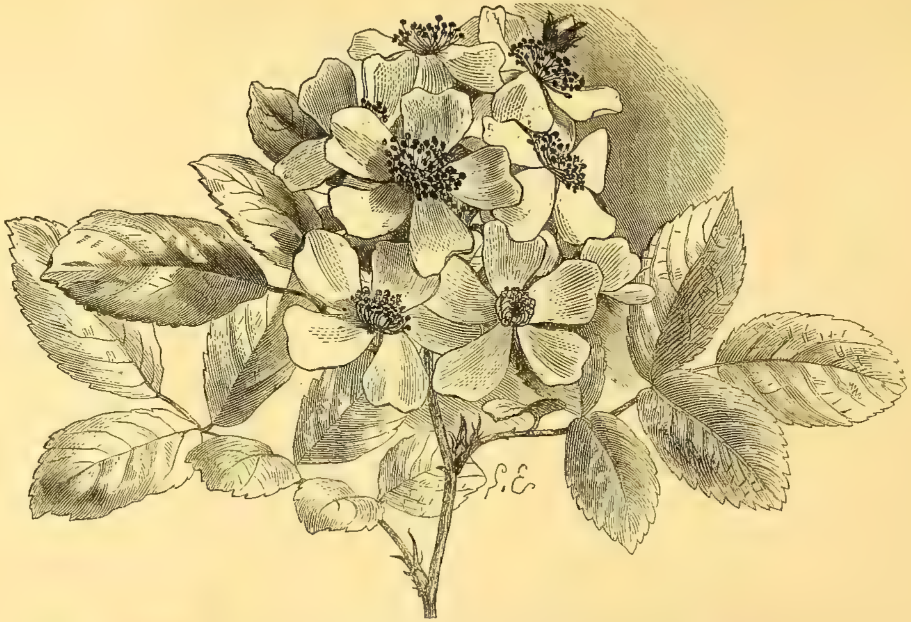
Clematis florida
,, azurea
,, lanuginosa
,, Fortunei, &c.
Pæonia Moutan
Chimonanthus fragrans
Magnolia conspicua
,, purpurea
Kœlreuteria paniculata
Xanthoceras sorbifolia
Cedrela sinensis
Wistaria sinensis
Sophora japonica
Spiræa callosa, &c.
Kerria japonica
Rosa indica
,, Banksiæ
Rosa multiflora
Pyrus spectabilis
,, japonica
Hydrangea Hortensia, and other species and varieties
Deutzia gracilis
Deutzia crenata
,, scabra
Philadelphus Satsumi
Lonicera japonica, and other species
Abelia uniflora, &c.
Diervilla (Weigela) rosea, and other species and varieties
Jasminum nudiflorum
Paulownia imperialis
Clerodendron fœtidum

Evergreen Shrubs or Trees With or Without Showy Flowers, not including the Coniferæ.

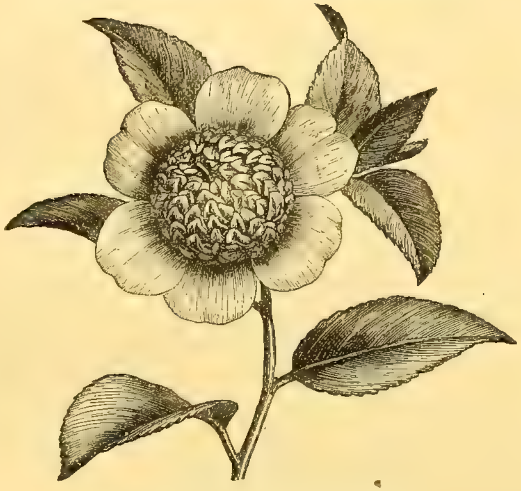
Berberis Bealei
Pittosporum Tobira
Eurya latifolia
Camellia japonica
Ilex cornuta
Skimmia japonica, &c.
Euonymus japonicus
Photinia serrulata
Aucuba japonica
Ligustrum japonicum
Ligustrum coriaceum
Osmanthus aquifolium
Elæagnus japonica, and other species
Quercus glauca, and several other handsome species of recent introduction
Chamærops Fortunei — the only Palm hardy in Great Britain



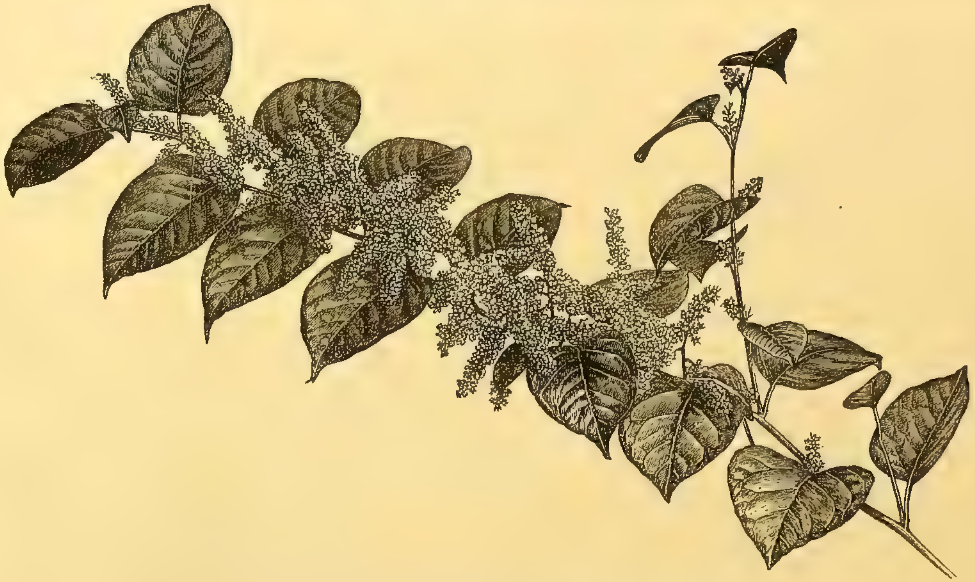
Japanese Herbaceous Plant (Macleaya cordata).



Japan Rose (Rosa polyantha).



Camellia japonica anemoneflora.



The Giant Japanese Knotweed (Polygonum cuspidatum).

GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS: PLANTS FROM THE CHINA—JAPAN REGION.

Deciduous Trees and Shrubs with Inconspicuous Flowers.

Akebia quinata
Ailantus glandulosa
Acer polymorphum
Morus alba
Broussonetia papyrifera
Planera japonica
Fortunæa chinensis

Coniferæ.

Pinus densiflora
„ parviflora, &c.
Abies Veitchi
Pseudolarix Kæmpferi
Larix leptolepis
Cunninghamia sinensis
Sciadopitys verticillata
Juniperus chinensis
„ japonica, &c.
Thujopsis dolabrata, varieties
Biota orientalis, numerous distinct varieties, as aurea, japonica, pyramidalis, pygmea, filiformis, &c.
Retinospora obtusa
„ pisifera, &c.
Glyptostrobus pendulus
„ heterophyllus
Cryptomeria japonica, several varieties
Taxus cuspidata
Torreya grandis
„ nucifera
Podocarpus japonica
Cephalotaxus Fortunei
„ drupacea
Salisburia adiantifolia

Herbaceous Plants.

Anemone japonica
Pæonia albiflora
Macleaya cordata
Dielytra spectabilis
Spiræa palmata
Astilbe barbata (syn. Spiræa japonica)
Chrysanthemum
Valoradia plumbaginoides
Polygonum cuspidatum
Lilium auratum
Lilium speciosum, &c.
Hemerocallis flava
„ fulva, &c.
Funkia Sieboldi, &c.
Bambusa, various species and varieties

Siberian Region.

The number of familiar species in cultivation from this region is not large, but the following list might easily be doubled. They are valuable on account of their extreme hardiness.

Clematis graveolens (yellow-flowered)
Pæonia tenuifolia
Lychnis fulgens
Halimodendron argenteum
Caragana (various species)
Pyrus prunifolia, Siberian Crab
Pyrus baccata „
Rhododendron chrysanthum
Scutellaria macrantha
Statice elata
Pinus Cembra

Luxuriance of Herbaceous Vegetation in Eastern Siberia and Kamtschatka.—One of the most remarkable features of the vegetation of eastern temperate Asia, in latitudes where the winter is very severe, is the extraordinary size which many herbaceous plants attain. Some Umbellifers, such as species of Heracleum and Angelica, are especially conspicuous, growing to a height of 10 ft. to 15 ft., and sometimes even higher, forming annual forests of herbage perhaps unequalled in any other temperate region. Associated with these Umbellifers are Nettles, Reeds, Polygonums, and various species of the Aster and Campanula families, &c., all of unusual dimensions for herbaceous plants. Hemp is cultivated in Kamtschatka, where it is said to grow to an astonishing size.

W. B. Hemsley.

Cold Houses and their Uses.—I had erected here, two years ago, a long range of these useful structures. The first division is 65 ft. long, with Cherries planted on the back wall, and with a shelf about 2 ft. from the glass in front, which is full at all seasons. Just now—October 29—we have grand pots full of Mignonette and winter-flowering Carnations, pans of Watercress, with Laurustinus, all in full beauty, making at this dull season a walk in the Cherry-house quite spring-like and refreshing. These will be duly shifted to the conservatory, and their places filled with boxes, 4 ft. by 3½ ft., for early Peas, followed by Strawberries, Radishes, Mustard and Cress, &c. The next department is occupied by Figs on the back wall, and in this I have no stage just now. It is filled with standard Roses in pots, which are particularly useful in May for bouquets for the London season. The third and last division has Peaches and Nectarines planted in front, and no place suits Camellias so well as the back wall, which I find furnished with plenty of blossom-buds; and, besides this, I winter therein Carnations, Forget-me-nots, Stocks, and a whole host of other things. My idea is simply this, that if success in hardy fruit culture be a desideratum, this plan should be adopted. In conclusion, I may add that for ladies, no more agreeable promenade could be desired whilst gentlemen are out shooting, than the cool, refreshing atmosphere of such a house, where they would be surrounded by the works of art and nature combined, and with a glass sky to protect them from the unruly elements.—R. Gilbert, *Burghley*, in "Florist."

THE FRUIT GARDEN.

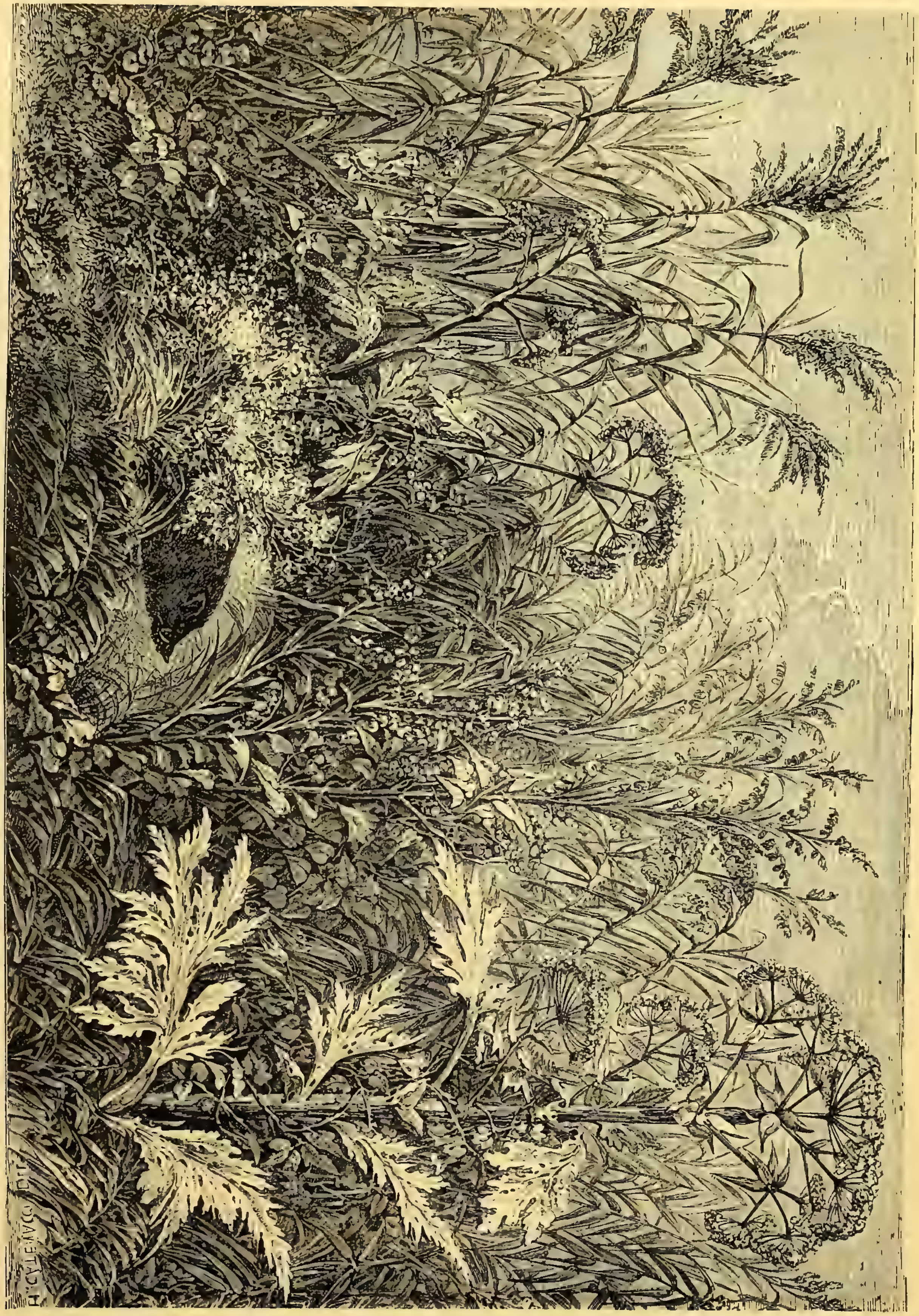
APRICOT CULTURE.

Of all hardy trees I, in common with many others, look upon the Apricot as one of the most uncertain with which we have to deal; but, having been tolerably successful in its culture, a few jottings of my *modus operandi* may not be unacceptable to the readers of The Garden. Many are the hours I have puzzled my brain to try and work out the solution of the mysterious dying off of the limbs, a disaster, unfortunately, too well known to all practitioners; and, though I have at various times had varying theories as to its cause, I feel obliged to admit that I am still somewhat in deep water on the subject; nevertheless, I half fancy the right theory has dawned on my mind. I have never been fortunate enough to have the privilege of growing Apricots under the shelter of glass, but I have for some years now been in the habit of visiting a garden where they are grown extensively in this way, and under such conditions at this particular place the sudden dying off of the branches is unknown, and yet the soil in which they are growing is, in every particular, like that in which ours are growing. Hence the following theory has been forced upon me—shelter does it all, ripens the wood, no frosts to injure unripe wood; constitution it cannot be, as many trees never lose a branch; soil it cannot be, as I have seen them do well in all kinds of soil. I therefore am inclined to believe that if thorough maturity of wood could always be insured the dying off of branches would soon become obsolete; at least, such is my present impression. Well, then, accepting this theory, all our aim should be, in commencing Apricot culture, so to arrange every detail as that perfect maturity of wood shall be guaranteed. We will therefore first refer to

Aspect or Position.—This ought to be south, south-west, or west; I prefer the first. Of course it is not usual, as Peaches always come in for that position; still, I have proved that Peaches do best on a west aspect and Apricots on a south one; there can, therefore, be no harm in the exchange. I have never yet seen Apricots worth the name grown without the shelter of a wall, and should therefore not recommend the attempt. The next requisites are

Drainage and Soil.—Stagnancy is injurious to all fruits, but Apricots are peculiarly liable to injury from this cause; for, though in the growing season a free allowance of water is an indispensable requisite, if at any time the drains get choked, the trees are not long in showing it; and, on examination, it will be found that many of the roots are wholly decayed. In respect to soil, the Apricot is not an epicure, as it will do tolerably well in any soil, from sandy loam to stiff clay, *i.e.*, having regard to drainage; but the best Apricots I ever saw—largest, cleanest, and finest-flavoured—were grown in what is termed a calcareous loam, that is, a soil in which a goodly percentage of lime is present; and this, therefore, should be obtained, if possible; lacking this, lime, in some form or other, should be added to non-calcareous soils—say in the form of lime-scrape, old mortar, or chalk. Light or sandy soils should have a free allowance of chalk, and be made extra firm, to neutralise the effects of the rapid evaporation of moisture, which always takes place from such soils. Manure is not required, except on the poorest of poor soils, and preference should be given to applying it in the form of surface mulchings rather than as an ingredient to be mixed with the soil; whatever tends—as manure in the soil would—to increase a watery, robust growth, which will be difficult to ripen, should be avoided. The depth of soil need not exceed 2 ft., and should be kept sacred to the roots—no overcropping.

Planting.—First, as to season, be it remembered that Apricots are the first of our hardy fruits to be in flower; hence it follows that proportionate early root-action takes place; this would, therefore, naturally lead us to plant early in the autumn. October is not too early, as the trees have then time to get a start ere severe frosts set in. I have seen Apricots transplanted in February when in blossom, and yet they have done well; but, to say the least, it is unnatural, and ought never to be practised. The manner of planting is of no small moment in the after success of the trees, and cannot be too



GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS: HERBACEOUS VEGETATION IN SIBERIA.

carefully attended to, for if planted too deep—especially if the stems be buried deep in the soil—the tree will refuse to grow; and if, on the other hand, shallow planting be adopted, results will be equally unfavourable through injury from drought, &c. Wet weather for the operation should be avoided, as the soil is then clammy and cannot be worked in amongst the smaller rootlets.

Training and Pruning.—Fan-shaped is the only system of training worthy of adoption with the Apricot, for the simple reason that a blank, through the sudden dying off of a branch, is soon filled up by regulating the tree or working in a new shoot. And here I would say, that I have not the slightest sympathy with that plumb and rule training that is occasionally practised. So long as the branches are all fully exposed to air and light, and do not intercept each other, what matters it if they are a quarter of an inch out of the exact angle? I speak feelingly, having had my fingers and toes all but frozen by trying to please a good old man, who in many respects, was an exemplary gardener; but in this particular apparently preferring a tree for its "pleasant look to the eye," rather than for its fruit. Disbudding is not nearly so much practised with Apricots as it should be. All foreright, outgrowing, and badly-placed shoots should be rubbed off at as early a stage of growth as possible, and others that remain, and which are not intended for new main-shoots, or for training in as lateral fruit-bearing shoots along the main stems, should be pinched at the second or third leaf, which will induce the formation of fruit spurs; this done, very little winter pruning will be requisite, other than the occasional removal of long spurs, or the cutting out of bare branches to be replaced by new shoots. In this manner the renewal of the wood of the trees should always be gradually going on, as the best fruit is produced on wood of from one to three years' growth. Should the trees grow excessively strong, and a check be necessary to make them fruitful, root pruning may be done by digging out a trench 4 ft. or 5 ft. from the wall, according to the strength and size of the trees, cutting clean off all long woody roots, and leaving all the smaller fibrous rootlets as intact as the operation will permit. September and October are the best months for root pruning. As with Peaches, Apricot buds frequently drop off just as they seem ready to open, the cause of which is just about as mysterious as the sudden collapse of the branches; but I am inclined to think that one great predisposing cause may be want of water during the growing season. They should, therefore, be abundantly supplied with water during the whole season of growth, and even after the fruit is gathered. Surface mulchings with stable litter, twice or thrice renewed during the summer, is a most excellent plan, and saves a large amount of watering, and acts as a manure at the same time.

Insects and Mildew.—Apricots are not difficult to manage in this respect; occasionally, however, green and black fly make their appearance, but a washing with Tobacco water soon settles them. A more formidable enemy is the small, greenish-yellow caterpillar, which curls together the leaves, and if not sought for and destroyed as soon as perceived, causes very great injury. Mildew is sometimes troublesome, and the best remedy for this is a good drenching of water, root and branch.

Varieties.—The best are Moorpark, Early Moorpark, Musch Musch, Kaisha, Large Red, Peach, and Hemskerk.

W. W. H.

PRUNING FRUIT TREES.

Autumn or early winter is the best and most convenient time for pruning most hardy fruit trees. There is usually at the fall of the leaves more leisure to give the necessary thought and time to the work. Every season brings its work, and when the pruning is put off or delayed it is often hurried over and ill done. When pruning is performed in autumn, there is time for the wounds to at least partially dry and heal, before severe frost sets in. I need hardy say that pruning should not be done during severe frost. It is now pretty well understood that at no season are the roots altogether inactive; although in autumn and winter the demand made upon them may be less, because the circulation is more languid, yet the movement of sap to all parts of the tree must even then be going on; and this brings me to another argument in favour of autumn pruning. If we assume that a constant circulation of sap is going on from the roots to the branches and buds, and we reduce their number, we must add to the strength and vigour of those that remain. The knife must be sharp so that the cuts may be clean and short. Unskilful or thoughtless pruners often make long ragged wounds which not only look unworkmanlike, but expose a large lacerated surface to the drying influence of the air. If in cutting off or thinning out branches a saw has to be used, it should be a thin narrow-bladed one. All branches should be cut off close to the limbs from which they spring, and the surface of the wound should be cut smooth with the knife. A little tar or pitch rubbed over the wound will keep the air and rain from it, and encourage the formation of new bark. Overcrowding branches in fruit trees is just as great an evil as overcrowding plants in the garden or field, and it has just the the same debilitating, pernicious effects. At the same time it is obvious that the definition of the term overcrowding must be left in a great measure to be dealt with by the common sense of individual cultivators. The whole economy of the tree depends greatly upon the regular healthy action of its leaves or lungs; and if they be densely crowded—hid away, as it were, from the sun and air—their action must be damaged and restricted, and the whole system of the tree put out of order. Of course, this does not happen all at once; it goes on for years, the leaves and fruit gradually decreasing in size in proportion as the head of the tree becomes thick, until, at last, neither is produced, except at the extremities of the branches, where they are fully exposed to light. Anybody who has had to do with neglected orchards, must know that such trees are common enough, and must have at times experienced a difficulty as to the best mode of treating them in order to restore them to health and fruitfulness. There is a great dissimilarity in the growth of fruit trees of any given kind; some require but little pruning, but all are benefited by having the branches properly regulated and thinned to admit air and sunshine, so that the trees may have their crop or load of fruit hung regularly all over their branches, and not merely swinging in clusters at the ends, where half, or sometimes more, are blown down, or so bruised by the wind as to be useless for keeping.

In pruning neglected trees, there is always a danger of doing too much at once. If we thin out a neglected wood or plantation of timber trees too severely, we let in the wind, and the cold air chills and stunts the growth, and the thinning may do harm; but if we thin gradually, removing at first a few of the useless trees, gradually letting in more light and air, the trees gather strength, and are soon able to appreciate the freedom of breathing, and the bracing currents to which they had long been strangers stimulate and invigorate both roots and branches. In like manner, in dealing with neglected fruit trees, we must proceed cautiously. All shoots that cross or rub against each other should be cut out, and all young, sucker-like shoots, that often spring from the main branches of old trees, should be cut off or wrenched off close to the stem, to prevent others growing from their base. There are many weighty reasons why fruit trees of all kinds should be regularly pruned. If this were done, the little regulation that would be required would give the trees no check. Whenever an ill-formed branch is crossing, or in the way of a better one, it should be removed at once before it becomes large. In a cold spring, a thick, overcrowded tree, where the blossoms are mostly at the ends of the branches, has not the same chance of furnishing even a partial crop as when the flowers are more equally distributed. A thickly-branched tree, from the absence of light and air, and the confined atmosphere which such crowding generates, encourages the formation of Moss and Lichens, which not only form a hiding-place for insects, but militate against the bark performing its natural functions.

Wall and other trained trees are often too much crowded with growth; not only are the main branches trained too closely, but the spurs are too numerous; the leaves, from being too crowded, lose substance, and, as a matter of course, the buds which they nourish at their base partake of the like weakly character. When a tree from any cause becomes starved or stunted, the sap vessels in the inner bark lose their elasticity and become shrunk, if I may so term it, and if something be not done to afford relief, the tree will gradually perish of inanition. Hundreds of trees die in this manner long before old age is reached. In such cases heading down, or a severe thinning and shortening, will infuse new vigour into them, and with the new growth will come new life and new powers of production. But at the same time the cause of unthriftiness should be sought for and removed. It may be unsuitable soil, overcropping, or the exhausting effects of insect attacks, and the latter often follow in the wake of the former, and are generally found in combination with them.

E. Hobday.

THE VICTORIA AND OTHER GOOD NECTARINES.

We doubt if there be any variety of the Nectarine that approaches the Victoria as regards its cropping qualities, or if it be surpassed for flavour and general excellence; but for a vigorous habit and fertility it is a perfect wonder, and this is not only our own opinion, but the opinion of everyone that we are acquainted with who has grown it. The Peach and Nectarine have never been cultivated extensively in this country for the market, probably because crops are rather uncertain, whether produced under glass or out-of-doors; but we have little doubt that, with Nectarines like the Victoria, the market gardener might calculate with certainty on heavy crops; and everyone knows that good Peaches and Nectarines fetch very high prices, and fair crops realise great profits. The Victoria Nectarine is worth a house or wall to itself. We planted a maiden tree eleven years ago, and it has never missed a crop from the first; and then they are such crops! and the fruit is large and fine—like ordinary sized Peaches, in fact, in the general run. Our tree has been cropped at the rate of about one fruit to every 6 in. of space every year, and it finishes all splendidly, and makes a strong growth the while. We could get about 1s. a fruit in a provincial town, or perhaps more, from the fruiterer's, and anyone can calculate what that would come to in a 30 ft. long house containing some 500 square ft. of training surface, which is the size of a division here, one-half of which is filled with the Victoria. It is doubtful if we have any three or four trees of other sorts that together equal it for a crop year after year; and if we had a range of Peach houses to plant now, we should plant four of the Victoria to one of any other varieties. The flavour is first-rate, and the fruit remarkably juicy and delicious, even when forced early, as our tree has been all its life—and that, as every cultivator well knows, does not promote either health or fruitfulness in a Peach or Nectarine tree. It is true, as had been stated regarding it, that the fruit ripens green on the shady side, and the side next the sun is always dark red; but if the fruit be laid on a tray in the Peach house for a couple of days or so after it is gathered, it will turn a bright yellow colour; and then not a handsomer Nectarine can be placed on the dessert table. It will keep longer, too, than most Nectarines in the fruit room. It is worth a house to itself in any garden, and we propose devoting one to it at the earliest opportunity. We hardly think it is particular as regards soil, for we have nowhere heard of it failing to give satisfaction; and we have no hesitation in recommending Peach growers to plant it exclusively, feeling sure it will give them every satisfaction. One thing we would advise, and that is to give the shoots room in training—4 in. or 5 in. apart at least. When you come to tie in the shoots this will appear rather thin; but this is of no consequence, considering that one can have as many fruit on a shoot as he pleases. We noticed five and six fruit on some of last year's shoots on our tree this summer, and all were good fruit. As has been said before, the tree is a strong grower, and the foliage is large and needs room in order to secure the maturation of the wood; and, this effected, a crop is safe if the trees are ordinarily well managed otherwise. As regards other sorts, one of the least common is the Balgowan, which is an old but excellent sort, and worthy of a place in any collection. Like the Victoria, it is a very vigorous grower, and produces very large fruit, but it is not so prolific. Putting aside some of the newer kinds, which we cannot say much about at present, the next best are Elruge, Violet Hative, Downton, Newington, Pitmaston Orange, and Hunt's Tawny. In buying Nectarine or Peach trees, it may not be unnecessary to say that those with good clean unions should be selected, and great care should be taken to see that they are quite free from gumming, and it is equally necessary to see that they are true to name. Mostly all respectable nurserymen are very particular on this point, and all profess to be, but gross mistakes are frequently made. Of a quantity of trees which we once bought from a respectable firm, several were wrongly named; and the mistake had not been made through any resemblance of the kinds to each other, for late varieties were substituted for early ones, and *vice versa.*—"Field."

GRAPE-GROWING ON BACK WALLS.

The following particulars respecting the growth of Grapes on the back wall of a Vinery may not be without interest. I have used the word Vinery, but the house was built for forcing Strawberries; it was therefore necessary to so arrange the Vines that they did not in any way interfere with that crop. The rafters are 14 ft. long, and the back wall 10 ft. high inside. As originally arranged, there was a front stage 4 ft. in width, and another occupying the back portion of the house, some 2½ ft. in height. Vines were planted along the back, and were allowed to bear from the stage upwards. The front Vines were stopped about halfway up the house; there were consequently about 7 ft. of roof and the same amount of back wall covered with bearing wood, which would be about equal to the whole amount of roof-space. The advantages gained were these—the back Vines could not in any way affect the Strawberry plants, and the front ones, not being brought in until April, did not also materially affect them. Those on the back wall were naturally somewhat earlier than those on the roof, and they ripened both fruit and wood perfectly down to the lowest portion of the wall covered by them. It will thus be seen that a crop of Grapes was secured without damaging the crop to which the house was especially devoted, and which, as may be easily understood, could not have been effected by the ordinary way of planting. Plenty of light was admitted to allow of the growth of plants in the summer-time, in proof of which, some Tomatoes and Chilies, grown in pots, ripened off perfectly. I am, therefore, inclined to believe that this method of Vine-growing would prove satisfactory to many. This arrangement was carried out for several seasons with good results; but, owing to its being found necessary to remodel the interior arrangements of the house, Vine culture therein was ultimately abandoned. One or two little incidents connected therewith may be worth mentioning. A stage was erected which covered the greater portion of the wall; it was therefore naturally concluded that the Vines would not succeed in the partial obscurity to which they were now subjected. Nevertheless, it so happened that only a portion of them were taken up; the remainder were merely cut down to the ground. These latter made during the summer such strong growth that they were allowed to remain, and, to my surprise, the following spring they grew vigorously and produced a fair crop of fruit. The shelves of the stage were 1 ft. apart, and were filled with plants until the Grapes were set and swelling. The laterals, too, were stopped at one leaf beyond the bunch, thus leaving it fully exposed to the hot sun during the ripening period; but scarcely a berry was injured. The best bunches, indeed, were those which were nearest the glass, and were not in any way shaded by foliage. I may add that I did not perceive any difference of quality in those grown upon the wall and those upon the roof; the former, however, required a considerable amount of water in hot weather; there would therefore be a little extra amount of labour to take into account, which would, however, be more than compensated for by the working space gained in the house during the summer months. Let it be understood that I am not giving an instance of extra good Grape culture, as the Vines were made to play a subordinate part in the house, and were not allowed to thoroughly establish themselves. Had they remained and received fair play, I have every reason to believe that very good Grapes would have been produced.

J. Cornhill.

Byfleet.

Spots on Pears.—M. Prilleux has communicated to the French Academy some observations on the black spots sometimes found on Pears, and which are known to Paris cultivators as *tavelures.* He has noticed that cracks in the fruit usually originate in these spots. All varieties are not equally subject to them; Doyenné d'Hiver suffers most frequently and most severely. Wet seasons favour the appearance of these spots, and standards generally suffer more than wall trees, and those with a south-west or western more than others with an eastern aspect. Some trees are affected year after year, while others similarly circumstanced escape altogether. The spots he finds to be produced by a small fungus, named Cladosporum dendriticum, which was first noticed on Apple trees. The filamentary spores take root in and penetrate the superficial tissues, swell at the extremities, and divide into small cells, which again divide, forming a mass of minute blackish cells (as may be seen by lifting the epidermis of a leaf thus affected), spreading their sporiferous filaments in all directions. The effects are different on different parts of the plants. On a leaf the part affected blackens and dies, but the rest of the leaf remains. On the bark crevices and nodes are formed, which, however, are not generally conspicuous. On the fruit it is different. The superficial growth is partially checked by the presence of the parasite, whilst that of the minor parts continues; consequently, unless relieved by early excision, the fruit becomes deformed, the dead parts distend, and the exterior cracks, exposing the sound portions within. The existence, sometimes unnoticed, of the fungus on the bark of particular individuals explains its re-appearance year after year on their fruit, although it may not be found on their neighbours. The peculiarity may be communicated by grafting.

EXPERIMENTS IN MAKING VINE BORDERS.

In April last (see p. 251) I gave, in The Garden, an account of some experiments which I was then making regarding the formation of Vine borders. The result is now before me in the shape of a photograph of a bunch of Black Hamburgh Grapes that weighed 5¾ lbs. I have also had several other bunches of the same kind heavier, but not so well shaped. These were grown on a border consisting wholly of leaves and manure. It was predicted that Grapes, produced under such conditions, would not be either well-coloured, or of good flavour; but on taking berries from Vines in another house, and mixing them with those just alluded to, I can detect no difference. The Vines in the manure border bore a heavy crop, and finished it satisfactorily, and they were allowed to break of their own accord, which they did regularly and well. The wood is clean and well ripened, and the foliage perfectly healthy, though showing here and there a few warts, which usually occur in the case of Vines grown in ordinary soil. The percentage of large berries was greater on this border than on an ordinary soil one, most of the Vines producing one or two extra large berries, one of which contained seven seeds, and weighed 2 oz. It resembled a Tomato in shape, and was by far the largest berry that ever came under my notice. I hope that none of the readers of The Garden will think that I prefer a manure border to one of the ordinary type, but the experiment in question goes a long way to prove that manure should play an important part in the formation of Vine borders, and that the produce is easily and readily influenced by the hand of the cultivator. Were I to attempt such an experiment at any other time, which is not at all unlikely (keeping away from natural soil) there are several ingredients, such as soot, ashes, and lime, that might be used with advantage, as I find worms in the cow-manure and leaf-border to be a great nuisance. J. Hunter.

Lambton.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Czar Plum.—I planted this variety in 1876 against a wall having an east aspect, and trained it single cordon fashion. It carried a full crop the first season, and it was the only one out of forty-five varieties that bore a full crop this season. This most excellent Plum was raised by the late Mr. Rivers, of Sawbridgeworth, from Prince Engelbert fertilized by Early Rivers, and it first fruited in 1874.—Richard Nisbet, *Aswarby Park.*

A Few Good Apples, with the months in which they are fit for use.

Brabant Bellefleur, kitchen	April
Cornish Aromatic, dessert	May
Early Harvest, dessert	August
Emperor Alexander, kitchen	October
Gravenstein, kitchen or dessert	November
Cox's Orange Pippin, dessert	October
Cox's Pomona, kitchen	December
Lord Burghley, dessert	May
Hawthornden, kitchen	August to November
Joanneting (White), dessert	July
Melon Apple, dessert	February
Mère de Ménage, kitchen	December
Nonesuch, Kitchen	October
Reinette du Canada, kitchen or dessert	May
Ribston Pippin, dessert	December
Spring Ribston Pippin, dessert	May
Rymer, kitchen	December

Melon Wine.—A French millionaire has invented a new dessert. He takes a Water Melon, red to the rind, pours it into a bottle of champagne, and then has it chilled over night. [So we see by an extract from a paper, but the practise is a very common one in Italy, where red wine is used, and the Melon suspended by a cord into a well to make it as cold as possible.]

Cherry Apples.—A very curious vegetable freak is recorded in the "Independence Belge," of an Apple tree in a garden at Bilancourt. It is as follows:—The stock of the tree is Cherry, on which has been grafted the Apple, a species of Golden Pippin. The fruit precisely resembles Cherries—the same stem, the same form, and nearly the same colour; but its taste is that of an Apple, and it contains pips instead of stones. [We give the above for what it is worth.]

PLATE CIV.

TWO NEW ANNUALS

ESCHSCHOLTZIA MANDARIN (E. CALIFORNICA VAR.) AND SWEET PEA VIOLET QUEEN.

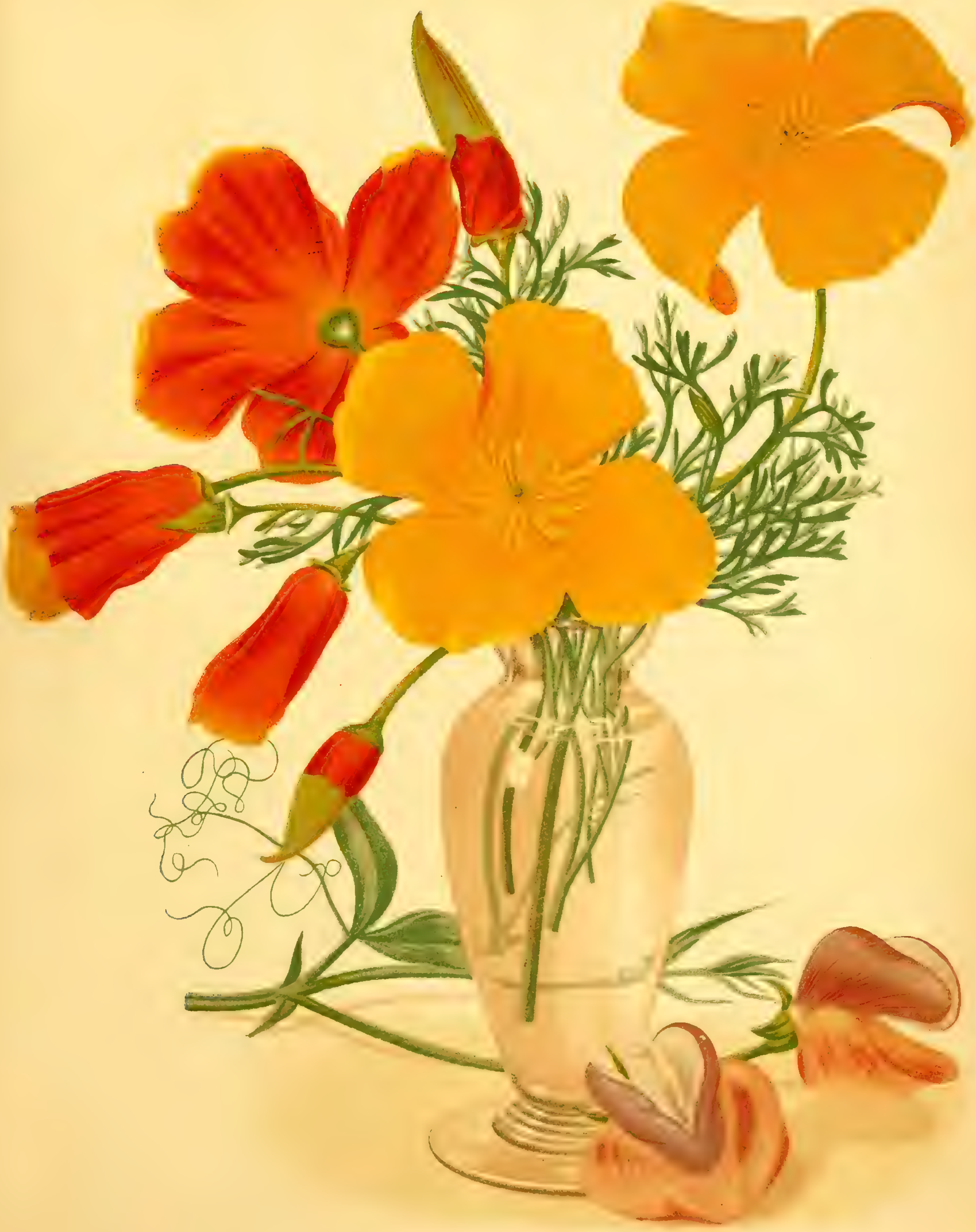
Drawn by Mrs. DUFFIELD.

These two beautiful annuals, which are drawn on the same plate by Mrs. Duffield, were shown during the past season by Messrs. Carter & Co., of Holborn. The Eschscholtzia was selected from the older strains of the well known old E. californica (which has long held a prominent place among the glories of our annual borders) by Mr. Robert Gardiner, foreman in the St. Osyth Seed Grounds. Its splendid orange-crimson colour makes it quite distinct from the old species or any of its varieties, which are often distinguished by European botanists and horticulturists by specific names but which the American botanists—best acquainted with them in a wild state—consider forms of E. californica. It is on the outside of the petals that the colour is most remarkable, though their inner sides are also richer in tone than the old form. The buds in particular are very deeply coloured; but, in all stages, the colour is wonderfully brilliant and lustrous. It is said to come true from seed. It is, of course, a plant of easy culture.

The Sweet Pea, Violet Queen, is a distinct and pretty addition to the varieties of the Sweet Pea. Of course it may be depended on to come true from seed, which, in its case, has the peculiarity of being quite distinct from that of the other kinds. While on this subject, we may add that the various beautiful varieties of the Sweet Pea are undeservedly neglected in gardens. Even as generally badly-grown from spring-sown plants, the Sweet Pea is the Queen of annual flowers; but when one thinks of the many charming ways in which the varieties, singly or mixed, may be used to adorn the garden, one cannot but wish that good cultivators would pay more attention than they do to Sweet Peas, their graceful arrangement and improved culture.

The Cape Gooseberry.—Permit me to supplement the remarks on this subject with a few cultural details. It is now something more than 20 years since I first grew the Cape Gooseberry, trained on the back wall of a late Vinery; and, although it fruited fairly well in such a position, yet it well repays for more warmth and light. It may be raised from seeds sown in heat, early in the year (but plants from cuttings are best), something after the way in which Tomatoes are raised. The young plants should be grown on and planted out in a warm sunny spot, about the end of May, and the crop will be in proportion to the strength of the plant when put out and the attention which they receive afterwards. In the open air, in our climate, the plants are annuals, and must be raised every year, like Tomatoes, or Capsicums, but under glass they will live and bear freely for years. Although young plants bear the finest fruit, very good crops may be grown in pots trained up to stakes, or, better still, place the pots on the front or back shelves, in any warm house, and train the shoots to wires near the glass. They will do well planted out in a border under glass, and trained to a trellis like Cucumbers; in such positions they make rapid growth and bear abundance of fruit pretty well all the year round. Mr. Speed, at Chatsworth, grows them in a span-roof house trained in this way. They require more ventilation and less atmospheric moisture than Cucumbers, and may be grown successfully in a much lower temperature. In this respect, they are, indeed, very accommodating; so long as frost does not reach them, they may be wintered successfully in a low temperature, if kept fairly dry at the root. Turfy loam, enriched with leaf-mould or old manure, and a sprinkling of charcoal, to ensure porosity, will grow them satisfactorily. When well grown, the fruits are as large as good sized Cherries, and are greenish yellow with an agreeable acid flavour.—E. Hobday.

Insect Borers (Tomicus challographus).—Among bark borers that assist in the destruction of the Pine, should be noted this species, which we passed over in the notice of that class of insects which we gave in our earlier volumes. It may be distinguished by its shiny, pitchy black thorax and head, and reddish elytra furnished with three short teeth at the retuse termination of its posterior extremity. Its main burrows are generally distributed in fours or fives, and radiating from a centre—as if four or five females had commenced their operations all from nearly the same spot—as shown in the annexed woodcut. It extends over the North of Europe to Scandinavia and the Ural Mountains, and occurs in Britain near London as well as elsewhere.—A. M.



ESCHSCHOLTZIA MANDARIN & E. AUR [illegible] var. [illegible] SWEET PEA [illegible]

THE FLOWER GARDEN.

WINTER PROTECTIONS.

Since the memorable winter of 1860-61, there has been no autumn up to the present time in which outdoor plants generally have been in a condition so ill calculated to withstand a severe frost as they are now. Everything is as soft as a continued moist, mild atmosphere, and a saturated condition of the soil, can make it. We have abundant evidence that, under such conditions, not only do all plants that are in any way liable to sustain injury from an exceptionally low temperature suffer, but also that many that are generally looked upon as able to stand our winters unscathed, sometimes succumb. The exceptionally low temperature that occurred seventeen years ago not only killed or greatly injured immense numbers of some Coniferous trees that had been introduced during the first half of the century, but also such things as Hollies, Bays, and Roses, with a host of other trees and shrubs, at the same when many plants much more tender, that had received a little protection, passed safely through the ordeal. Evergreen shrubs that had been moved early—during the latter part of August, in September, and up to the middle of October—escaped completely, whilst others that had not been touched suffered severely, showing that the check which they received by removal had induced a hardier condition in both wood and foliage. Alterations which I was making necessitated the removal of some standard Roses at the above time, with all their leaves fresh and green upon them; these received no injury, whilst those that were not interfered with were nearly all killed—scarcely a plant escaping. Such portion of evergreen shrubs as we could not move before the latter part of November were much injured, the reduction of temperature in both soil and atmosphere, with insufficient time intervening between the removal and the frost occurring, did not admit of any root development to sustain them; at the same time the ground was covered with a thick coat of snow that prevented the frost penetrating to a depth that affected the roots. Such plants as Tritomas and Lobelia cardinalis, that were well mulched, the tops of the former being tied up and surrounded by straw and Fern, and the crowns of the latter covered with 6 in. of old tan, were quite safe; they were grown in light sandy soil in a dry situation, circumstances which no doubt still further tended to assist them. The Pampas Grass was also safe with the leaves tied up close, like a truss of straw, to a height of 4 ft., the ends above this being doubled back and tied in with the lower portion. Round this was placed about 3 in. of clean Wheat straw, putting it on quite straight, like a well thatched roof, and securing it with tar twine passed round the whole in several places, and fastened to three tall Dahlia stakes stuck firmly into the ground; the lower part of the thatch covering was left so as to extend well over the roots for a foot or so all round from the collar of the plants, and under this were placed 3 in. or 4 in. of old tan. Even where there is a number of plants to protect, the work is soon done. This protection I subsequently always used. It requires some years, under the most favourable conditions, to grow large and effective plants of this most beautiful Grass. When destroyed, it takes an equal time to replace it; and as it is not sufficiently hardy to be safe, even in places where it may go unscathed for years it is the height of folly to risk it for the comparatively little trouble involved in protecting it. It would be well at present to protect, as far as possible, everything of a doubtful character, so far as such protection can be carried; and, for this purpose, wherever Fern and Furze (Gorse) are obtainable, there is nothing better or less objectionable in appearance. Especial provision should be made for Tea Roses; a few pieces of Gorse or Fern tied round the heads of standards or bushes on the commencement of frost, first drawing the shoots of the bushes together, and fastening them loosely with a thin Willow or piece of twine, may be the means of securing an acceptable harvest of flowers from these tender Roses; and what holds good of the above is equally applicable to others. T. B.

Insect Borers (Tomicus challographus).

MODERN FLOWER GARDENING.

Upon no subject are opinions so conflicting as upon that of flower garden embellishment. Truly there is a variety of tastes to satisfy, and it is well that there should be, for we are too much the slaves of fashion. Imitation has of late years prevailed to such an extent that our gardens are mere repetitions one of the other. The bedding system, though attractive, has been sadly overdone—so much so that acres of verdant lawn have been frittered away to give place to geometric patterns for the display of formal plants that exist but for a comparatively brief season, leaving their places unoccupied for the greater part of the year. It should be remembered that mere quantity and sameness cannot produce pleasing effects unrelieved by a judicious grouping of hardy evergreens of the best types. In short, the amount of bedding plants now generally employed should be greatly reduced, and thus not only would the whole aspect of our flower gardens be improved, but the labour and expense attending their decoration would be considerably mitigated. We must not, however, run into an opposite extreme in this direction; some say away with all architectural embellishments, down with steps, balustrades, vases, and fountains; they are not in accordance with nature; we must have, in place of these, a garden more in accordance with nature. In my opinion, every residence of any importance requires architectural embellishment combined with terraces, balustrades, fountains, and vases. These, with appropriate surroundings, harmonise well with bedding plants, and form a pleasing link between nature and art. True we have terraces so constructed as to baffle all attempts to plant them successfully, and there is also often an inclination to destroy individuality by crowding all kinds of plants into a given design, when a far more satisfactory effect might have been produced by introducing distinct features. We have plenty of material at our disposal for skilful embellishment; indeed, never were our resources so rich.

By the introduction of sub-tropical plants into our arrangements, we have not only produced more pleasing effects, but a way has been opened up for a freer use of good hardy permanent plants.

Carpet bedding has been unmercifully censured for its frivolity, and for the ill-judged contrasts of colours and lavish consumption of plants which it requires. Notwithstanding this, however, it has become established, and will doubtless, in time, be improved. Better combinations of colours are being made, and numbers of hardy plants are being substituted for tender ones, thus giving greater permanency to the system. Plants of stately port have also been introduced into it, so as to break up its monotony and over-formality. This style of planting is successfully carried out in our public parks, and it certainly has its admirers. The chief objection to carpet gardening is its cost, which, it must be admitted, is great where tender plants only are used, such as Alternantheras, Mesembryanthemums, &c.; but, where hardy plants are employed, it need not necessarily be expensive, and very pleasing combinations may be made with them, and simplicity of design, too, will be found to give most satisfaction.

It is said that by our present system of massing and blending colours in highly-dressed parterres, old-fashioned English flowers have been banished from our gardens; and that, to some extent, is true; but, as a re-awakening interest is being taken in their culture, suitable spots in which to grow them will doubtless be found. Whilst isolation and singleness of effect characterised the old style of arrangement, variety and harmony of the whole, judiciously blended, is what we now aim at; and in this comprehensive system certain types of herbaceous plants become useful, as, for instance, the white variety of Anemone japonica, which has the advantage of an ample leafage added to showy blossoms; and there are many others amongst hardy perennials equally suitable; but they require judicious selection, as it is necessary they should have lasting properties as well as fine bloom. Besides, this class of plants give most satisfaction when permanently grouped and established; therefore, the best plan is to plant them in the more picturesque portions of the garden, where they will yield far more pleasure and gratification at all seasons than they possibly could do in more formal arrangements. I willingly take Nature as my guide in garden decoration; but it is quite possible to follow Nature too closely in some of our arrangements. It is not wise to mix different styles of gardening too much together. The most suitable place for herbaceous plants is the wild garden, where they can be arranged in a natural manner, and where their individual beauty can be fully brought out.

It may be said that old-fashioned gardens in the natural style were more enjoyable than our modern ones; and that in a certain sense may be true, but it should be remembered that there was not the abundance of plants suitable for flower gardening that we have now. Neither was much attention paid to grouping or blending of plants. Mixed shrubberies, and the more formal herbaceous arrangements, constituted the main features of embellishment. Young cultivators in those days were not taxed in reference to the blending and grouping of classes of plants as now, and in working out artistic patterns in which to arrange them. It was a special point in the tuition of young men, and mark of merit, that they were well versed in the names of herbaceous plants, which were all arranged in a formal manner, with their names attached, and planted in order of height, as precisely as the soldier upon parade. I remember when I could have run over a whole collection botanically as glibly as possible; and there is a fund of interest attached to the cultivation of hardy perennial plants which I hope to see again come into fashion. And now that bedding out is more fully understood, and the various aspects of the more fashionable styles brought into due proportions, there will be found more time to study the more permanent features of interest. Geo. Westland.

Witly Court.

Anemone Robinsoniana.—I can endorse all that the Rev. Harpur Crewe has said (see p. 545) about this Anemone. Five or six years ago I found acres of it in Kent, in an undulating meadow sloping to the south-east. I have carefully kept the knowledge of its locality to myself, or the London plant collectors would most certainly have dug up every root, although they might be counted by hundreds of thousands. So thickly do they grow in some places, indeed, that the earth is carpeted with their elegant foliage, and plentifully studded with their heaven-hued flowers; close by runs a babbling brook fringed with Chrysosplenium alternifolium, and here and there in this charming meadow are large patches of the finest Orchis mascula I ever saw.—W. Elliott, *Stapleford, Notts.*

Eulalia japonica variegata.—I notice that this fine plant has been recently alluded to in The Garden. I imagine that its full beauty is not yet known in Europe. We obtained some of the original plants of it from Japan, and planted about 120 of them in a row in the spring of 1876. It was very fine last year, but this year it is magnificent, having thousands of flower-stems, which have been the admiration of all visitors since the end of September. The plant itself is very ornamental during the summer months, being of intermediate growth between the old ribbon Grass and Arundo Donax variegata; but the flower-stems, which average from 6 ft. to 7 ft. in height, complete its beauty. When the dry north-west winds of winter commence to blow, the plumes to some extent show their character, taking the form of ostrich feathers; but this, in the damp climate of England, would not be seen. If, however, the stems be cut and placed in a warm, dry room, they assume this character in a very short time, and form one of the most beautiful room decorations I have ever seen. This plant is perfectly hardy. Here it has been exposed to a temperature 10° below zero; and it is not particular as to soil. It increases freely by division, and large plants may be made of it in a short time. One of your correspondents thought that it would not reproduce itself from seed; this I consider probable, but every shoot will make a plant, so that seed is not required. The more recently-introduced kind, called Zebrina, appears to be only a variety of the above, the flower-stems being identical with E. j. variegata; but the plant is very distinct, and quite a novelty as regards variegation. It is, I think, the first variegated plant, having the white across the leaf. I have noticed a Rush with the same peculiarity, but this is also a Japanese plant introduced about the same time, and it will also prove a good addition to hardy aquatic plants, for it appears to grow as freely as any hardy bog weed.—James Taplin, *South Amboy, New Jersey.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Aster grandiflorus.—Mr. Elliott sends us, from Stapleford Hall, specimens of this Aster, which he describes as the best Michaelmas Daisy in the gardens there. It is often pretty even in December in southern gardens, but we did not think it would flower so well in Nottinghamshire. This plant, being so late a bloomer, would probably repay for growth in pots and slight protection.

Hardy Plants Unseasonably in Bloom.—I have to-day (Dec. 8) gathered here (North Hants) the following flowers, viz., Violets—Czar, Victoria Regina, the double Neapolitan; a handful of the common Primrose, growing in the woods; good blooms of the white-flowered Menziesia, Lithospermum prostratum, and many kinds of Violas and Pansies are in bloom, especially the varieties Blue Bell, Perfection, Mulberry, and Princess Teck. Snowdrops are ready to burst from the foliage, and Daffodils are 2 in. above the ground. Altogether, the present promises to be the most unseasonable season I have ever known. The rainfall for November was 6 0·13 in.—quite unprecedented in this part of the country.—W. W. H.

—— Primroses and Violets are flowering abundantly here. The Virginian Stock, after dying down this autumn, has grown up again, and is now in flower for the second time, and Roses (of several good sorts, including Tea-scented ones) are blooming freely in the open garden. I have cut a constant succession of Rose blooms nearly every day until now, and more are budding. —H. W. H., *Wolverton, St. Lawrence, Isle of Wight.*

Lobelia illicifolia as a Hanging Plant.—This Lobelia makes one of the prettiest hanging plants with which I am acquainted. During the summer it is covered with lively white starry flowers, and in winter it is smothered with purple berries. It is easily propagated, and is half hardy, but a cool greenhouse seems to suit it best. I am surprised that this plant is not more generally grown than it is.—W. Elliott.

Geranium molle aureum.—I had this plant years ago, but lost it; I have, however, re-discovered it in its old locality, Old Charlton, Kent. It will make a good groundwork for purple Crocus, or it may be put to many other uses in the spring flower garden. In spring it is a clear canary yellow, and altogether the brightest golden hardy plant with which I am acquainted.—W. E.

Single China Rose.—The single form of the common China Rose is a most beautiful plant—far more so I think than the double form—and ought to be in every garden. It has claims before even such fine kinds as Rosa rugosa and Rosa pyrenaica. It may be easily propagated by means of cuttings, and it will flower when but a few inches high. It is, I believe, as yet rare, even in collections in which such plants might be expected to be found.—W. Elliott, *Stapleford Hall, Notts.*

ORCHIDS.

ORCHIDS FOR GENERAL CULTURE.

Everyone has not facilities for growing Orchids as a collection, and some are deterred from attempting their culture by the idea that they are very difficult to grow. To a certain extent this is true. Most species require special treatment, and a good deal more attention than can be afforded in gardens where the labour is limited; but there are a few Orchids, nevertheless, about the culture of which there is nothing very difficult, and which might be advantageously included in any ordinary collection of stove plants. Some of these are old, and some new; but we will only mention a few that are good growers, free flowerers, and worth cultivating. The first on the list is the old Phajus grandifolius, otherwise known as Bletia Tankervilliæ, and which is a free-growing and viogrous subject, and very ornamental when it throws its magnificent spikes of flower up in the spring. It succeeds well in the ordinary stove, and needs but little attention. When the plants need re-potting, it should be done after they have done flowering, and just when they begin to grow. It delights in good strong turfy loam and peat, or leaf mould, together with sand and plenty of lumpy charcoal and good drainage; in other respects it may be treated like any ordinary stove plant—neither kept too wet nor too dry, either in summer or winter, and during the growing season it should have occasional waterings of liquid manure.

Calanthe vestita.—This, though belonging to a different class, is not unlike the first named in miniature, and requires similar treatment. It is a very pretty Orchid, and popular even among Orchid growers. Healthy bulbs, potted two or three together in 6 in. and 7 in. pots, make nice little specimens. Light turfy loam and peat, with charcoal, form a good compost for it. The bulbs should not be buried in potting, but placed pretty firmly in the soil, and room left for watering. The finest lot of plants of this kind that we have seen were firmly potted in what appeared to be almost pure loam, pressed as firmly about the roots as we would a Strawberry plant. In summer the plants require moderate shade from strong sunshine, and in winter water should be sparingly given, but not entirely withheld.

Cœlogyne cristata.—This is one of the best Orchids for general culture; in fact, it should be grown in batches like the Chinese Primrose or the Cyclamen, and no doubt would be if it was as easily procured. It grows freely in the stove or intermediate house, and produces its lovely white flowers in great profusion. It may be grown in a basket or pot, or on a block; but the pot is most convenient. Good drainage, fibry peat, Sphagnum, and lump charcoal are essentials, and these should be raised in a firm mound above the rim of the pot, and the plant pegged down upon it. Small plants will make good specimens in a short time, being easily divided, and small plants may soon be propagated when it is desirable to increase the stock.

Dendrobium nobile and its Varieties.—These still rank amongst our finest Orchids, whether regarded for the beauty of the flowers or the profusion in which they are produced. Very easy to cultivate, and succeeds best in fibry peat and loam, Sphagnum, and charcoal, packed pretty firmly together about the roots, and raised in a mound above the rim of the pot in the usual way. Plenty of drainage is necessary. Spring is the time to repot, after the plants are out of flower. As a rule, the strongest shoots spring from the base of the old stems; but sometimes they break away from the tops also, and elsewhere. The best plan in any case is to peg all growths down to the soil, and encourage them to root into it. An ordinary stove treatment, and plenty of water during the summer, will easily produce a fine growth by October, when water should be almost withheld; and, unless the plants are wanted in flower early, they may be transferred to a cooler house during the season of rest, but not starved or exposed to cold and damp. A friend of ours, who grows large specimens for the room vases, transfers them to his cool Vineries in autumn. In potting, as we should have mentioned, care must be taken to avoid burying the base of the stems; leave all but the roots clear and above the surface of the soil.

Dendrobium Farmeri and densiflorum are two fine species, that succeed in the stove or intermediate house, and which, according to our experience, continue to grow and flower under very adverse circumstances. We have known plants that had remained in the same pots for years, and been long subjected to a low temperature during the winter and spring, that hardly ever failed to flower annually. They, however, repay genuine culture, and require the same treatment as D. nobile, except that they are better left in their summer quarters during the winter. None of the three are troubled much with insects or disease.

Odontoglossum cirrhosum.—This comparatively new species is described as one of the most lovely Orchids we possess, and we think it deserves the compliment; but what gives it most value is that it is a free grower, and prefers an intermediate house, or even a warm greenhouse, to the stove. It would perhaps be better wintered at least in the last-named structure, after its bulbs are perfected, otherwise they seem inclined to make a second growth if left in heat. Its free growth is remarkable. A number of very small imported pieces, which we received last autumn, made rapid growth as soon as potted in the spring, and have made fine glossy bulbs, some of which are throwing up flower spikes. Living Sphagnum chiefly, and bits of peat mixed, seem to be all that it requires in the way of compost. The plant delights in plenty of moisture at the root during summer, and should not be dried off altogether in winter, but the soil should be kept sufficiently moist to keep the Sphagnum alive. The leaves are not nearly so sensitive to damp as the O. vexillarium. It is, in short, an uncommonly hardy intermediate-house plant, of easy culture, and should be in every collection of flowering plants.

Cypripedium insigne, insigne Maulei, barbatum, venustum, and niveum.—All these, except the last, are robust-growing kinds, easily kept in health; and their flowers, which are abundantly produced, are very ornamental and useful for cutting. The old insigne is an exceedingly free grower and flowerer, and Maulei is a very superior variety of it. They all grow freely in fibry loam, peat, sand, and charcoal, and should be potted tolerably firm, and well watered while they are growing. To attempt growing them in the usual Orchid compost, consisting of Sphagnum and poor peat, is simply to half-starve them. The pretty little C. niveum is a slow rather than a weak grower, and requires the same treatment as the others. Those named are perhaps as cheap and as easily procurable as any; but there are a number of excellent varieties, both new and old, which are equally good growers. Among some of the fine kinds may be named—Dayanum, Argus, Dominii, Sedeni, Fairieanum, lævigatum, Roezli, Pearcei, Lowi, and villosum.

Goodyera discolor.—This is an ornamental foliage and free-flowering plant, allied to the Anæctochilus class, but far less difficult to grow. When grown for its foliage alone, it should not be allowed to flower; but the flowers contrast effectively with the dark velvety foliage when they are produced. It should have the warm end of the stove, and be near to the glass, but shaded during the summer. As the shoots soon spread out over the surface, it is best grown in a flat, shallow pan, well drained, and filled with Sphagnum, peat, sand, charcoal, and broken potsherds. Young plants may be assisted by a bell-glass at first, and, as they grow, the shoots should be pegged down over the surface of the pot.

Aerides odoratum.—Though the Vandeæ section are usually supposed to need special treatment, particularly as regards temperature, the plant above named is frequently seen in perfect health in a warm corner of the stove. It will live in cooler quarters for years without suffering much injury, but will not grow much, and rarely flower. We once kept a plant about 1 ft. high in a stove where the temperature was only moderately high during summer, and rather low in winter, for six years, during which time it hardly lost a leaf, but made scarcely any growth. The leaves shrivelled a little, but when the plant was transferred to a moist warm place near the boiler end of a house, the leaves got plump and the plant grew rapidly. There are three or four varieties of odoratum, any of which are well worth growing. Plants should be grown in pots half filled with drainage, and potted in fibry peat, charcoal, and Sphagnum, and raised well above the surface of the pot. To save the long air roots, which are thrown out from the stem, from injury, the plant should be placed out of danger from contact with any object. It delights in an almost steaming atmosphere during the summer, but should be kept pretty dry in the winter time. In a mixed collection of stove plants the Vandas should occupy a shelf above the hot-water pipes if possible; and if the shelf can be covered with Sphagnum, kept moist, it will insure a sufficiently moist atmosphere about the plants during their growing season.

Zygopetalum Mackayi and crinitum.—Both of these are free-growing plants and sure bloomers, and succeed in fibry loam, peat, Sphagnum, and charcoal. The pots should be well drained, and in potting the plants must be set pretty well up above the rim of the pot, and the compost packed neatly and firmly up to the base of the bulbs to keep them erect. Stove heat and plenty of water at the root during the growing season will suit them, but moisture must be nearly withheld during the winter.

Miltonia spectabilis and its Varieties.—M. spectabilis is a beautiful and popular plant, of easy culture. It succeeds in the same compost as the above, but without the loam, and is best grown in a shallow pan. It does not require a very high temperature, and should be shaded from strong sunshine, which turns the foliage yellow. We have seen a good specimen growing in a Vinery under the Vines, where it stood for some time after the fire heat was withdrawn, and was green as Grass, and healthy, and flowered well.

Lycaste Skinneri.—This is another of those popular Orchids which is recommended for general culture. There are numerous varieties of it, all of which are more or less attractive. It requires ordinary stove treatment, and a compost of Sphagnum, peat, and charcoal to grow in, and good drainage. Should be grown extensively.

Lælia purpurata.—A magnificent Orchid, and one not very difficult to grow; it thrives in the same kind of compost as the Lycaste, and requires much the same treatment in other respects.

Here ends our list. No doubt it might be added to; but we have chosen to enumerate only a few of the easiest cultivated and really useful species, and such as might be added to any mixed collection of stove or intermediate-house plants. When anything like a collection is attempted, and a house cannot be set apart for them, the best plan is to devote a shelf of the stove to them alone, in order that their wants may be more conveniently attended to, putting such as require most heat at the warmest end, and *vice versâ*. As regards moisture and shading, &c., what will suit the generality of stove plants will suit the Orchids as well; but, as far as practicable, the latter should have the special treatment they require as regards watering and potting. S. J.

Phalænopsis amabilis.—I have a plant of this that has been in bloom over three months, and which has now on it thirty-eight expanded blossoms. We have a row of this Orchid in baskets hanging in front of a moist stove, and, although all the plants are by no means in full beauty, I counted the other day on them 140 fully expanded flowers. The long and graceful sprays of blossom, drooping over Ferns and fine-foliaged plants, mingled with spikes of Calanthe and that beautifully-scented old favourite, Zygopetalum Mackayi, have a lovely effect. Seen under such conditions, Orchids show to greater advantage even than in houses exclusively devoted to their growth, as their great want is foliage, which, in a wild state, they borrow from the trees on which they grow. I may mention that nearly all our plants of this beautiful Orchid vary in size and markings, some having flowers nearly as large again as those of others, while the clear white top petals are in some quite pointed, and in others nearly circular. A general impression exists that these plants flower themselves to death; but, up to the present time, our plants have annually increased in size of foliage and strength of flower-spikes, although they are nearly always in bloom. No one need doubt their ability to grow them successfully if they have a moist stove temperature at command. We make our own baskets, which consist of rough-barked wood, filled with fresh Sphagnum, crocks, and charcoal, with a few lumps of fibry peat; and plenty of tepid water is given at the root at all seasons. They may be grown in pots, but I find that those in baskets are invariably the most vigorous.—J. Groom, *Henham.*

Greenhouse Stages.—A mode of constructing these which I saw the other day in the Aigburth Nurseries, Liverpool, may be worth notice. The house in which they are erected is span-roofed, some 16 ft. or 18 ft. wide, and is used for Pelargoniums and Cinerarias. A pathway runs all round it about 2 ft. 6 in. or 3 ft. from the sides, which leaves a stage of that width all round the house, and a stage some 6 ft. or 7 ft. wide in the middle. The framework of these stages is made of angle iron bolted together, and supported on low, cast-iron standards let into brickwork. On this framework are laid 1¼ in. battens, reaching from side to side, fitting up flush at the ends against the iron, but not touching each other by about an inch or so. So far as I could see, no nails or screws were required. The whole had a neat, strong, light appearance, and I should think such stages would be almost indestructible if kept painted. Another departure from the old form of such stages is the arranging of the paths at the end in an easy curve, thus doing away with all friction at the corners, and saving much valuable time, where a great deal of traffic is going on, without loss of space.—E. Hobday.

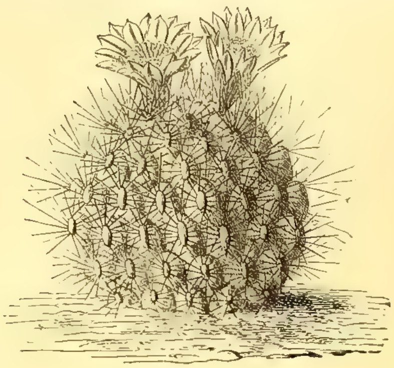
Pilumna fragrans.—One of the best varieties of this lovely Orchid which we have seen is now in flower in Mr. Bull's Nursery, at Chelsea. Its blossoms, which are beautifully fringed, are of the purest white, set off to advantage by a bright golden eye. The perfume of this Orchid is peculiarly refreshing, somewhat resembling a delicately scented Clove-Pink.

Cypripedium macranthum.—A large consignment of this Lady's-slipper, a coloured plate of which was given in The Garden, p. 30, Vol. XI., has lately been received by Mr. Williams, of Holloway. Though hitherto scarce, this, the most beautiful of the genus, is therefore now likely to become popular in our gardens.—S.

THE INDOOR GARDEN.

A FEW GOOD ECHINOCACTI.

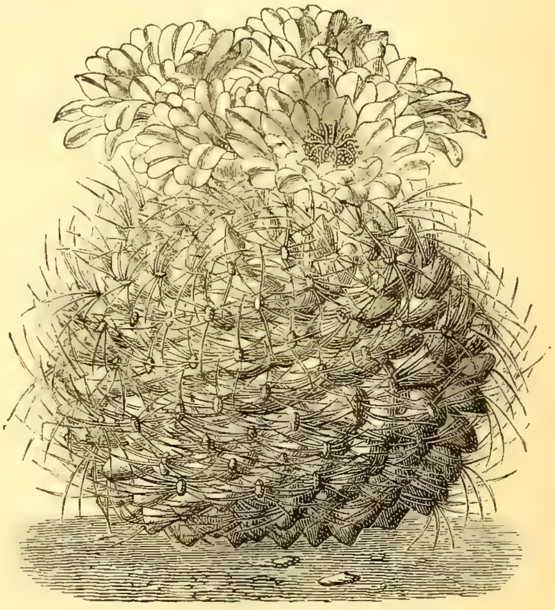
Echinocactus Cummingi.—This is one of the hardiest of the genus, and its flowers, which are orange-yellow, rank amongst the brightest of that colour, and they are produced in abundance. The plant is small in stature, flowering at the height of 2 in., and rarely exceeding 8 in. The spines are pale brown, and when young the plant may be easily mistaken for a Mammillaria. I regard it as one of the best of Echinocacti.



Echinocactus Cummingi.

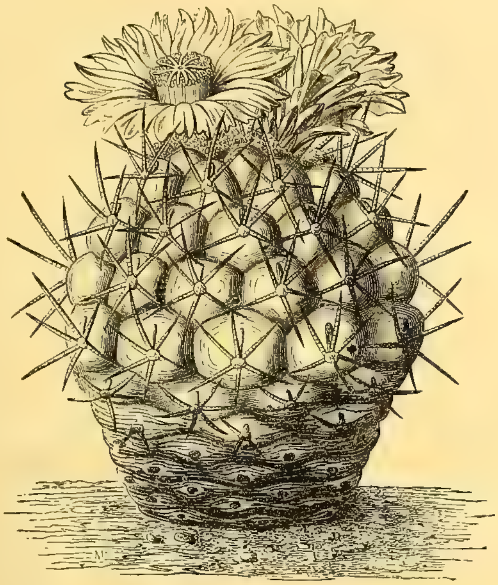
E. multiflorus.—This is at times confounded by cultivators with E. oursellianus; but it is distinct. It has white, reflexed spines. The flowers are pure white, and very beautiful in shape. It is a dwarf plant, seldom attaining more than from 4 in. to 5 in. in height. It is also nearly hardy, and therefore not fond of a close place.

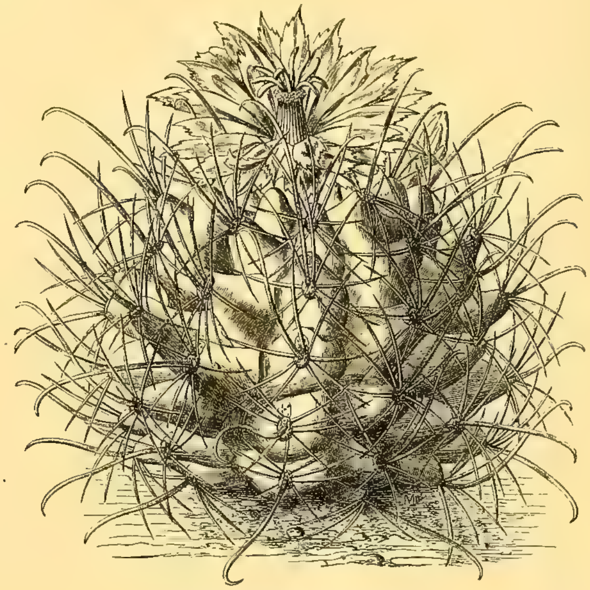
E. myriostigma.—This, without doubt, is one of the most singular plants in cultivation, having more the appearance of the work of a sculptor than a natural production. It is covered with white scales of a stellate form, and is almost as hard as a stone. It produces silky yellow flowers freely in summer. It generally has five ribs, but not always, some having only four; while, on the other hand, others have as many as seven. It is a free grower, but slow, attaining 1 ft. in about twenty years. It does very well in a cool greenhouse; those who have seen this plant once will never forget it. It is sometimes called Astrophytum.

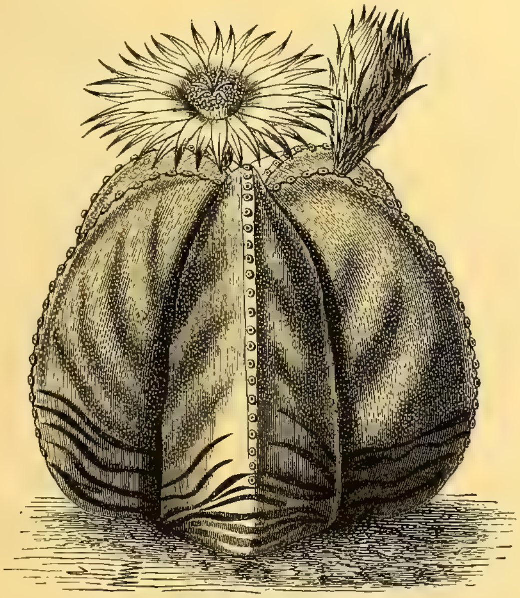


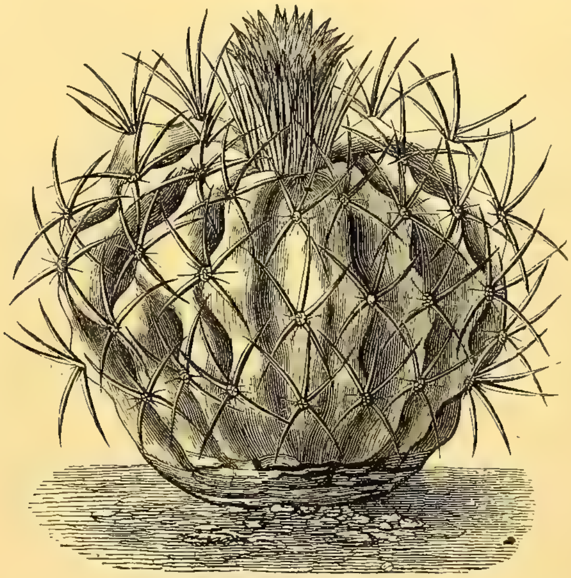
Echinocactus multiflorus.

E. hexædrophorus.—This might be mistaken when young for a Mammillaria, but its flowers prove it to be an Echinocactus; the whole plant has a pulverulent aspect. It is a slow grower, which, after the lapse of five or six years, may have attained some 4 in. in height, and, after that, it scarcely shows any change. I have known plants of it in twelve years to only grow 2 in., though doing well and flowering freely. Its flowers are pale rose, spines grey and depressed. Seedling varieties from this kind have been called Laboureti and Saltitella. When grafted, it grows faster than on its own roots.


Echinocactus hexædrophorus.


Echinocactus longihamatus.


Echinocactus myriostigma.


Echinocactus obvallatus.

E. longihamatus.—This is a plant quite capable of taking care of itself in the struggle for life. It is one of the most distinct and important of the family to which it belongs. It has a central, hooked, dark brown spine, from 6 in. to 10 in. long. The flowers are straw-yellow. Small plants of it have the mammose appearance of Mammillarias; but when old, the ribs become more pronounced. It is a slow-growing kind, attaining a height of from 12 in. to 20 in. E. sinnatus greatly resembles it; it has weaker spines, but is doubtless a variety.

E. obvallatus.—This belongs to a section which has undulated ribs, some more so than others, but all sufficiently marked to be recognised. Its spines are flat, dark, from 1 in. to 2 in. long, and in sets of from six to eight. The flowers of this section are small, and often unable to open on account of the spines being in such a dense mass in the centre. Plants belonging to this section, when raised from seed, vary greatly. I am therefore of opinion that the several varieties found here and there in cultivation are only seedlings. They have a curious habit of splitting if overfed, by which they are often spoilt. They should therefore be watered with care. Echinocacti are easily grown. The chief care required is in watering them.

Sudbury House, Hammersmith. J. Croucher.

CHRYSANTHEMUMS AT LIVERPOOL.

Cultivators about Liverpool have long been celebrated for their Chrysanthemums, and it would certainly be difficult to find finer blooms than those which I saw when visiting in that neighbourhood at the end of November. Mr. Tunnington, gardener to Charles MacIvor, Esq., Calderstone, obtained a first prize for cut blooms at the late Liverpool meeting, as well as for standard plants in pots. His collection consisted of plants mostly in 9-in. and 11-in. pots; those in the former size were trained to a single stem, the others had several branches. Both growth and foliage were very robust, the latter almost as broad as one's hand, and of a remarkably deep green colour. Disbudding had been carried out, so that only one bloom remained on each shoot. In growing first-class specimens, it is important to disbud at the right time, and also to select the right bud, for there is usually one that will make a more perfect bloom than the others, and it is not always the terminal one. To secure a first prize, where the competition is keen, it is not only necessary to have good flowers from which to choose, but much judgment and skill are required in selecting and making up a stand. Mr. Tunnington's plants all through the summer stand in a very snug corner, exposed to full sunshine and air, and yet sheltered from the fierce winds that sometimes prevail in this neighbourhood. They were potted in very rough turfy loam and manure, the last shift, especially, had been rich and turfy. In the later stages of growth, liquid manure is also freely given, not always, indeed, of one kind, as Mr. Tunnington believes in giving plants a change of food occasionally, and so varies their liquid diet, sometimes giving guano, at others, liquid manure made with soot or sheep droppings. It is only by the attention given to this and other small matters that excellence is reached. The four standard plants, shown by Mr. Tunnington, were remarkable examples of patient skill in cultivation and training; the kinds were Mrs. G. Rundle and George Glenny. I saw another remarkable collection of Chrysanthemums at Elmswood; and Mr. Hinds, gardener to Sir Thomas E. Moss, at Otterspool, had also a choice collection, tastefully and effectively arranged in the conservatory adjoining the mansion. In the majority of country gardens fairly good flowers, tastefully disposed, are more in request than extra superior culture. The following is a list of the very best varieties of the large exhibition varieties; Pompone and Anemone-flowered kinds are not so much grown in the north, although, for home decoration, they are very beautiful, and some of the Japanese varieties are absolutely indispensable, especially for cut flowers. The best kinds were Hercules, Mr. Gladstone, Prince Alfred, Princess of Wales, Prince of Wales, Beethoven, Mrs. Heale, Queen of England, Lady Sinclair, Alfred Salter, Cherub, Isabella Bott, Eve, Beauty of Stoke, General Slade, General Bainbrigge, Ossian, Blonde Beauty, White and Pink Venus, Nil Desperandum, Empress Eugenie, Jardin des Plantes, Lady Hardinge, Guernsey Nugget, Hero of Stoke Newington, Princess Beatrice.—E. Hobday.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Croton falcatum.—This is one of the best Crotons that has lately been sent out. It has lance-shaped leaves from 18 in. to 2 ft. long, elegantly marked with bright crimson, purple, orange, and many shades of green. For table decoration it must eventually become one of the most valuable of plants. It was raised in the Victoria Nurseries, Holloway.—S.

Pteris Dixoni.—This is a pretty, dwarf, crested form of the well-known Pteris serrulata. For growing in pans or small pots it is a very desirable kind, and its broad crested pinnæ render its fronds useful as edgings for vases of flowers.

Tropæolum Ball of Fire.—This is one of the best plants that can be grown in a warm greenhouse at this season of the year for furnishing a bright display of colour, and for supplying flowers of a striking character for small bouquets. It is best planted at the base of rafters or pillars in good sandy loam. If exposed to plenty of light and air and well treated, established plants of it will bloom for months in succession. It is also an excellent pot plant.—S.

Improved Hyacinth Glasses.—The new Hyacinth Glasses, recently introduced to public notice by Messrs. Stevens and Williams, Brierly Hill, Staffordshire, are now manufactured in a variety of colours. The design and the mode of supporting the stem are improvements. The uncoloured ones are useful for placing flowers in when not in use for Hyacinths.

The Display of Chrysanthemums in the nurseries of Messrs. Jackson & Son, at Kingston-on-Thames, has this year been very attractive. The whole of the plants have been grown in a natural manner, and are arranged to form a bank extending the whole length of the show-house of the nursery. The Japanese kinds have been particularly fine.

An Old Fern.—M. de. Saporta has recently called attention to a fossil found in Middle Silurian rocks at Angers, which represents the oldest known land plant. It indicates a large Fern, allied to Cyclopteris, which is preserved in iron sulphite.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

During such an autumn as the present, with continuous moist, mild weather, it becomes a necessity to adapt the treatment of plants in greenhouses to the season; the protracted genial temperature that we had through October kept many plants in a growing state later than usual, and, as is well understood by experienced cultivators, plants that make growth thus late are more difficult to deal with through the winter than in seasons when the weather has been such as to induce a gradual hardening up and ripening of the wood before winter sets in. Everything that is at all susceptible of attacks from mildew is more than usually liable to be affected by it during the present autumn; Heaths especially, both hard and soft wooded, and all the softer-leaved Cape and New Holland plants, will require frequent looking over, with the view of detecting any appearance of the fungus as soon as it exists. It is most fatal in its effects upon the leaves, as, where once it gets established, it quickly destroys their vitality, be they old or young, causing them to fall off prematurely, which no after treatment can rectify; not only are plants, when so affected, very much impaired in appearance, but serious injury is done by the roots suffering through the loss of foliage. The presence of mildew is frequently not observed by those who have had comparatively little experience in plant culture until it has done considerable harm; on close examination, plants that are affected by it will exhibit a slight discolouration of the leaves, not over the whole plant, or even any particular branch, but sometimes at the points, or often lower down, and more particularly on the smaller internal shoots towards the centre, that through the growing season have been less fully exposed to the solidifying influence of light and air, but where, if not at once checked, it quickly extends to the strongest and more important shoots. As soon as it is discovered, the plants should be at once laid down on their sides and syringed freely with clean water, so as to wet the entire surface of all the leaves, and whilst the foliage is in this damp condition, the whole should be dusted over with flowers of sulphur. Many contrivances for applying it have been brought under notice, but I have found nothing so handy and effectual as the old-fashioned sulphur-puff; as a substitute a small gauze-bag may be employed, using the material of which it is made double if it be found that the sulphur passes too quickly through it singly. The sulphur should reach every leaf of the affected plants, as the mildew will often have extended much further than can be traced with the naked eye; keep the plants still laid down whilst the sulphur is being applied, turning them over as required to get at every part. In this position less of the powder will get to the soil on the surface of the pots than it otherwise would do, and where, if allowed to remain, it might do considerable injury by being washed down to the roots in the operation of watering; its presence there would have an effect similar to that of lime, a substance which is so injurious to the generality of evergreen plants. To prevent any chance of the sulphur thus reaching the roots, it is well, before raising the plants to their proper position, to wash the surface of the ball with a spouted can or the syringe. Replace the plants on the stages as soon as they have got quite dry, allowing the sulphur to remain on for a week or so, during which time, should the weather be windy, do not give much side air, or it will blow the sulphur on to the surface of the balls; after leaving it on for the length of time just named, the destruction of the fungus will be complete, and the plants should be again laid down on their sides and syringed freely with clean water, so as to wash the whole of the sulphur off. Another remedy for the destruction of mildew is to mix flowers of sulphur with water at the rate of from four to six ounces to the gallon, allowing it to stand for a few days, during which it should be stirred up several times, then pour the water gently off. This can easily be accomplished, as the sulphur, being heavy, will settle to the bottom; with the water thus impregnated, syringe all affected plants, wetting both upper and under surfaces of the whole of the leaves, laying the plants down over a tub, or trough, in a way that will catch the water, and allowing them to remain in this position until quite dry, as the water in which the active properties of the sulphur are held in solution must not be allowed to reach the roots. Amateurs will find either of these certain remedies for mildew on all plants that are affected, pot-Roses included.

Pelargoniums.—Both the large-flowered and Fancy varieties should now be kept in a temperature of not lower than 40° in the night, nor above 5° higher than this; and, where there is a small house or pit that can be devoted to these and other things that do the best where a little more warmth is kept up than in an ordinary greenhouse, where nothing more is attempted than merely to exclude frost, when there is an appearance of cold nights, a little fire-heat should be turned on.

Primulas, so useful at this season, are much less liable to damp when kept as warm, or even a little warmer, than Pelargoniums; the reason these plants are so subject to lose their lower leaves, which rot off near the base of the stalk, a complaint that often extends to the main stem, causing the destruction of the plants altogether, is that the usual cool greenhouse treatment through the winter, when their vital energies, consequent upon this being their flowering season, should be actively at work, is not sufficient to keep them in a healthy condition. In all cases they should be kept as near the light as it is possible to place them, with the atmosphere as dry as it can be maintained. Where there is sufficient warmth, as above indicated, to keep them growing, as is their wont, light is essential to prevent the flower-stems being drawn up weak; and where, by necessity, they are kept cooler than they like, an abundance of light will reduce the disposition to damp.

Cinerarias, sown first in the spring, as advised for coming into flower early, will be much benefited by a temperature such as above, but no higher, as any attempt at forcing with them is detrimental to their well being; in their case they will be better for standing on some moisture-holding material, which will keep their leaves in a healthier condition than if stood on dry shelves; when necessitated to place them in the latter position, I have found it an advantage to lay Sphagnum about 1 in. thick on the surface of the shelves, damping it slightly from time to time. There are few greenhouse plants that bloom naturally, or can be induced to do so without anything approaching to absolute forcing, but are much better kept at a temperature such as the above, a little higher than that of an ordinary greenhouse; but where a single house has to do duty for all, including plants it is desirable to keep quite at rest, there is no alternative but to make a compromise betwixt the requirements of both, although a little may be effected by placing the whole of the plants that are in the most active condition at the warmest end, keeping the others at the opposite end, at which point the greater portion of the air required can be given, which will still further tend to make a difference.

Camellias.—See that those of which the flower-buds are in an advanced state have the soil kept moderately moist, as, although not requiring to be so wet as when the summer's growth was progressing, still they will never bear being as dry as some things. When Camellias are stood in a conservatory attached to a dwelling, where there is usually a little fire-heat kept on, with the atmosphere proportionately drier, care must be taken to apply some water to the floor, especially in the immediate neighbourhood of the pipes, to correct the drying influence of the latter. Where there is the convenience of a small house or pit, where a temperature of 55° can be kept up in the night, this will be found most useful for bringing many things on into flower, such as Genistas, Acacias armata and Drummondi, Azaleas, both the ordinary garden hybrids and the hardy purple-flowered amœna; Richardias and winter-blooming Epacrises will also bear, for a few weeks, such a temperature; and scarlet Pelargoniums that have been prepared through the summer by exposure to the full sun out-of-doors, and confining their roots in small pots, so as to bring about that somewhat stunted condition which, with this class of plants, is essential to the production of flowers, rather than leaf-growth, when subjected to heat. If the soil in which the roots of such Pelargoniums are placed has become poor and exhausted, a little weak liquid manure will be an advantage. Here again, with all such plants, endeavour to get them as near the roof glass as circumstances will permit of; at no time in the year is this so necessary as in the winter, with plants that are under the influence of a temperature that accelerates their flowering. Hyacinths, Tulips, Crocuses, Narcissus, and Lily of the Valley will do well in such a house, although the progress they make in flowering will not be near so rapid as where under the influence of a higher temperature; consequently where these plants, especially the Lily of the Valley, are wanted in flower by a given time, they must be started considerably sooner than if more heat can be given them.

Bulbs of all kinds that were potted early and plunged in ashes, with a covering of the same material overhead, will by this time have made considerable growth; they must not be allowed to remain in such a position so long as to cause the foliage to become drawn out too much. Some of the ashes may be drawn away where enough top growth has already been made, plunged in the open air under a wall as is frequently done, when the crowns have advanced far enough and the bulbs are not wanted for immediate forcing, they may be removed to a cold frame or pit, where protection from frost can be given; or to a greenhouse or Vinery; but, in all cases, the exposure of the young leaves now in course of development must be gradual, for if they be subjected to full light whilst in the blanched state, caused by the covering they have been under, the leaves will be so far crippled as to prevent their making further healthy progress.

Shrubs for Forcing.—Any shrubs, such as Rhododendrons, Ghent Azaleas, Andromedas, Kalmias, Deutzias, Prunus, Guelder Roses, or others of similar description, should at once be taken up and potted, for, should severe weather set in, there may be some difficulty in getting the work done. Do not use larger pots than is necessary to admit the roots with a little soil; on the other hand, there ought not to be any unnecessary mutilation by reducing the size of the balls, so as to compress them into pots not sufficiently large to hold them, as all reduction of root-power that takes place is not only calculated to lessen their flowering capabilities, but renders them less able to recover their strength when again planted out after forcing. The soil they are put in may consist of old potting material, or, this failing, such as has been used in frames for Cucumbers or Melons; but, in any case, it should be moderately dry, for if taken from out-of-doors in its present saturated state, it is not fit to place the roots of even the commonest plant in.

Potatoes.—Late varieties, in common with the earlier kinds, are much more affected with the disease than in ordinary seasons, and even where care was taken at the time of lifting to pick out all that were perceptibly diseased, I find that some still keep decaying, and probably will do so up to the end of the year. I have found a little newly-slacked lime dusted over them, scattering it in handfuls as the stock is being again looked over, to be one of the best preventives against the disease spreading, for where any that are diseased lay in contact with others in the store, it very quickly spreads unless something be done to destroy the vitality of the fungus. In such a season as the present, when there is every prospect of Potatoes being very dear, it is worth while to take more than usual precautions to secure the keeping of those that were sound when lifted; the drier and more airy the place in which they are stored the better, with the additional essentials of being cool and dark. Many who have not room to grow a sufficient supply of Potatoes buy in about this time all they will require. I would, however, recommend this to be delayed for some weeks yet, until the disease has ceased to spread amongst the late dug kinds.

Carrots and Beet, taken up and stored a few weeks back, should be looked over to see that they are keeping properly, as sometimes these roots, when stored with layers of ashes in the usual way, take to fermenting, in which case they become a putrefied mass in a very short time. It is not well to pile them up too deeply, as, under such conditions, they are more likely to be affected in the way just mentioned.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

December 17.—Examining Cucumbers, stopping them where required, and picking off all useless blossoms. Making a new border for Roses 18 in. deep, and filling it with good loam and manure. Looking over Cauliflower plants, picking off all decayed leaves, and stirring the soil amongst them.

Dec. 18.—Getting into spare frames a quantity of large Endive for protection. Turning over Mushroom manure to sweeten. Covering up part of another Seakale bed. Getting manure wheeled on to the land whilst the weather is favourable, and mending Box edgings in the kitchen garden.

Dec. 19.—Getting up another lot of Snow's Winter White Broccoli and putting them in spare cold pits. Getting more Asparagus into frames and renovating the linings. Staking and tying some newly-planted trees and shrubs. Cleaning the walks and Grass in pleasure grounds. Looking over the Grape room, removing bad berries, and filling up the bottles with water where required.

Dec. 20.—Sowing Mustard and Cress and getting in another batch of French Beans. Covering up Endive and Lettuces to blanch. Lifting and root-pruning some dwarf-trained Plum trees that were growing too grossly. Rolling down all gravel walks firmly, also all the Grass as fast as weather will permit.

Dec. 21.—Getting into the forcing pit some more Lily of the Valley and Deutzia gracilis. Proceeding with the pruning of large deciduous trees. Clearing off all decayed vegetables and prunings and burning them. Getting into the Mushroom-house a little more Chicory and Dandelion to force.

Dec. 22.—Looking over Pelargoniums, stopping them, and picking off dead leaves; examining Pines and watering any that require it. Looking over the fruit-room, and removing any fruits that are rotting. Fruits in usefor dessert:—Pines, Grapes, Pears, Apples, and Nuts.

Something like 90,000 lb. of snails are sent up daily to the Paris markets from the gardens of Poitou, Burgundy, Champagne, and Provence, where they are specially reared for this purpose.

THE LIBRARY.

THOMPSON'S GARDENERS' ASSISTANT.*

(NEW EDITION.)

Issued nearly twenty years ago, and just at a time when such a work was much wanted, this book was accepted as a standard authority on everything relating to vegetable and fruit culture, the name, position, and acknowledged ability of the author being a guarantee, it was felt, of its practical character and trustworthiness. With the flower garden Mr. Thompson did not attempt to deal so fully as with the other departments, and this omission, it has always been acknowledged, was the fault, or rather want, of the work, otherwise so complete. This want it has been the chief aim of the promoters of the new edition before us to supply. We are informed, in the preface, that it is in the section devoted to the flower garden that the greatest change has been made, and that the subject is now treated with that fullness which its importance requires —the new matter added under this head amounting to "well nigh one-third of the original work."

Orangerie in the Petit Trianon, wreathed with Wistaria in flower.

In order to judge how far this promise has been fulfilled, it will be necessary to allude separately, but briefly, to the different subjects embraced in this section, and treated by the different writers who have assisted in its compilation.

The first chapter is devoted to the flower garden and pleasure grounds, and deals chiefly with the laying-out of the grounds and planting arrangements, &c., &c. The subject is treated at considerable length, and as fully, perhaps, as the circumstances and plan of the work will permit; but it will be observed that, while in the original edition the author seldom or never obtrudes his own opinion dogmatically, but contents himself rather with laying down general principles and pointing out errors and defects to be avoided, the writer on the flower garden in the new edition, with questionable taste, steps considerably out of his province to give the reader a good deal of his own private opinion, rather positively asserted, on some points. Mr. Thompson, in discussing the subject, leaves the position of the flower garden an open question, realising, perhaps, that it is well to "consult the genius of the place" in such matters, but this wise and wholesome rule is disregarded by his successors. In noting "a few of the mistakes as to position, construction, and the use of plants, that have done much to bring discredit on this style of gardening," the writer tells us it is a mistake to place the flower garden in a "prominent position adjacent to the windows of the mansion, and occupying the foreground of an extended view." "The introduction of colour," he adds, "in ever so slight a degree, in front of the mansion, where the windows command a broad open landscape or park scene of moderate extent, is a glaring mistake." Perhaps the best reply that could be offered to such an unqualified statement is, that in many of the very best examples of the choice of a position for the flower garden this rule has been completely set aside—the flower garden occupying the most "prominent position" in front of the mansion, and merging gradually into the pleasure grounds beyond, and these again becoming finally lost in the distant landscape—the whole forming an easy blending of nature and art, and exhibiting a gradual transition from the one to the other. Abrupt divisions or terminations between the flower garden and the park or woods, are always objectionable: but it is difficult to see where the former could be placed, in many instances, without occupying the foreground of an extended view, when it is remembered that both fronts of a mansion are almost invariably placed so as to secure the best and widest view possible. On this point, indeed, the author appears to be as much puzzled as any one, for he abruptly leaves the subject without telling us where the flower-garden should be placed, merely hinting that a suitable site, more or less confined, may be found for it, without interfering with anything else, from which it may, or may not, be inferred he would place the flower garden, like a "sticking plaster," anywhere out of sight. This is a question, we are afraid, which the writer on flower gardening has not grasped in all its aspects, and he has disregarded the opinions of other and competent authorities. The position of the flower garden is a question, in fact, on which no arbitrary rule can be laid down. Everything depends upon the configuration of the ground and the character of the landscape. Where the position is flat and occupies the foreground of an extended view of level Grass fields or cultivated land, the above objections apply to some extent, although some of our best landscape gardeners could furnish examples of such situations treated successfully without shutting out the landscape; but, when the mansion occupies a commanding position, and the ground in front is sloping, or precipitious and irregular, with a far-stretching landscape of hill and dale, and woods beyond, the case is quite different, and an artist would think twice, probably, before he neglected such a position and facilities, and such opportunities of displaying his skill. Many of the Scottish Castles afford good illustrations of this style. When the eye is lifted up, it can take in a prospect miles and miles in extent, and it can drop back again to the pleasant picture in the foreground without any effort or without discerning any incongruity in the scene. In such a case the flower garden does not really come between the eye and the distant prospect, nor does the one detract from the other in any sensible degree. "A Plan of a Flower Garden in Kent," by Mr. Marnock, published in The Garden a few weeks ago, it may here be stated, is a sufficient commentory on the style recommended in the new "Gardeners' Assistant."

Before leaving this part of this subject, in which "glaring mistakes" are so forcibly pointed out, it is interesting to note that the only phase of flower gardening the conductors of the work have thought fit to illustrate is one which must be regarded as exhibiting the feeblest conception of their task in this direction—that is "carpet bedding," so called, a style of garden decoration which is not perhaps carried out extensively in a dozen gardens in the kingdom, and which in hundreds of cases would not be tolerated. That no better or higher phase of garden embellishment could be suggested, since it was considered desirable to illustrate the subject, is a lamentable blot on a work of such pretentions.

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* "Thompson's Gardeners' Assistant." New Edition, Revised and Extended. By Thomas Moore, F.L.S. Blackie & Son, Edinburgh and London: 1878.

The succeeding chapters in this section treat upon Hardy Arboreal and Shrubby Plants, Hardy Conifers, the American Garden, Herbaceous Plants, Florists' Flowers, Bedding and Sub-tropical Plants, Conservatory and Greenhouse Plants, the Stove and Forcing House, and Floral Decorations. Cultural directions are given in each chapter, and those subjects suitable for furnishing the flower garden and pleasure grounds are fully catalogued and described. The chapters on Hardy Trees and Shrubs and Herbaceous and Alpine Plants, &c., are worthy of particular mention, as the species are here brought together in a more handy and accessible form than they have ever been before, we believe, and in this respect alone the "Gardener's Assistant" will, in future, have a greatly increased value for the gardener.

We now turn to those sections of the book devoted to the kitchen garden, pruning and training, and fruit culture. The additions to the first do not call for particular mention, and this applies also to the chapter on pruning and training. Considering the interest the last subject has excited of late, and the change of opinion and practice that has taken place within the last twenty years, particularly as regards the Apple and Pear and stone fruits, it might have been expected that, in a new edition of such a work, experience would have been brought down to the present time, but this has not been done. There is reason to fear that a narrow spirit has operated disadvantageously in some portions of the work by preventing the introduction of useful matter from other sources. Coming to the subject of Vine-culture, which has an interest for so many, we find that little or no use whatever has been made of recent experience. Mr. Thompson brought the subject well down to his own time, but that part of his work would certainly bear revising a little now. It is perfectly well known that no gardener cares a farthing, at the present day, for the practice of Oak Hill some thirty or forty years since; nevertheless, this has all been served up over again, with some comments added (under the head of Garden Structures) on the different conditions under which Black Hamburgh and Muscat Grapes ripen most successfully in England and Scotland, which will probably amuse our friends in the north, who, we believe, have not yet resorted to the practice of tying their Muscat Grapes up by the points of the bunches to ripen them as well as those grown in the south. The same authority also makes quite a misleading statement on the subject of Vineries, when he states that "the requisite heat is more easily and economically maintained in small houses than in large ones," as he might have satisfied himself by arithmetical demonstration. It has been demonstrated often enough, surely, that the maintenance of the requisite temperature, easily and economically, in hothouses, does not depend so much upon the relative size of the structure as upon the number of cubic feet of air it contains in proportion to the radiating surface exposed in the roof, ends, and sides—in other words, a large and lofty house is sooner heated, proportionally, than a small house, and keeps its heat longer. The engravings of glass structures are rather too much after one pattern and one maker. The descriptive notes, with plates, on "Insects Injurious to Plants," by Mr. Andrew Murray, form a useful feature of the book. The plate of carpet bedding will serve to show future generations what the art of flower gardening was in the nineteenth century. Sections of a number of ordinary structures are printed on one side only of thick fine plate paper! These common cuts might have been printed in the usual way without loss, and much space and paper saved thereby. A number of coloured plates—clean, but not very artistic in design—help to make the book more expensive, without being more useful. J. S. W.

KITCHEN AND MARKET GARDEN.*

Messrs. Macmillan have just published the "Kitchen and Market Garden," by contributors to The Garden. In this place we can say no more of the book than that it is handy in form, and published at a price (4s. 6d.) that will not interfere with its utility. It differs from previous books in the same way, at least, in including the market as well as the kitchen garden. All good gardeners well know that the practice most worthy of their attention, and, as far as possible, their imitation, is that of the best market gardeners near London and other large cities. Notwithstanding this, very little notice has been taken of market gardening in any books hitherto published on the kitchen garden. This was brought about by the fact that market gardeners are a class apart. Information concerning their work was not obtainable without some trouble, and the market gardener is usually too busy a man to write himself. Both on the staff of The Garden newspaper, Mr. W. Falconer and Mr. C. W. Shaw made what we believe to be the first attempt at long and systematic observation of the best culture as it is in London market gardens. The result is embodied in this book, which also contains the practice of the best private gardeners in England—among them being Mr. Thomas Baines, the late James Barnes of Bicton, A. Dean, Richard Gilbert of Burghley, J. Groom, D. T. Fish, E. Hobday, J. Simpson, W. Tillery, and W. Wildsmith. The question of market and kitchen gardening is of some national importance. It is not only desirable that our private gardens should be in the highest degree productive; the supply of our markets with good vegetables and salads is being now, to a large extent, undertaken by foreigners. There is no good reason why it should be so; if we take advantage of all our opportunities, we ought at least to supply our own markets with vegetables and salads without foreign aid. The publication in a concise form of the information necessary for the carrying out of every kind of market and kitchen garden cultivation, in the best manner known up to the present time, will, it is hoped, be useful to this end and otherwise in all that concerns the cultivation of vegetable crops.

FERNS OF THE BRITISH ISLES.†

The popularity of Ferns is, no doubt, great, but we should hardly have thought that publishers would have ventured on the production of so many handbooks on the subject as have appeared during the last few years. The idea, however, of publishing photographs of Ferns from Nature is a good one, though this art must fail in rendering much of their grace and beauty. The little work just brought out by Mr. Van Voorst is a laudable effort in this direction. It is everything that can be desired in binding, paper, and printing, the photographs are remarkably uniform and good in tone, the scientific portion of the work is as accurate, and, last though not least, its price renders it accessible to every one who has a drawing-room table to put it on. From its possessing these good points, we shall not be surprised if it speedily reaches a new edition, so we need not apologise for some strictures both on the design and on its execution. Is it educationally advisable to substitute the identification of objects from the superficial characters shown in pictures for that based on minute examination and description? Admitting the desirability of a portfolio of Fern photographs, are there not already enough descriptive works on the subject to render letterpress unnecessary? In the sketch of the structure of Ferns prefixed to the present work, the only phrases to which exception may be taken are "seeds or germs" for the spores, and "branch of the leaf" for the spore-bearing part of the frond in Osmunda and Ophioglossads. It is a pity that Hymenophyllum and Trichomanes should be placed among the Polypodiaceæ and separated by the alphabetical arrangement, and there is no reason, according to modern views of structure, for the exclusion of our interesting little Marsilead, Pilularia globulifera, if the Ophioglossaceæ are admitted. It is to be regretted that the letterpress has not been arranged so as to be opposite the plates, and that these latter should be in an order of their own, and on no less than eight different scales. The photographs seem, in some cases, to have been taken from dried specimens; at all events, that of the Osmunda is flat, and gives no idea of the true grandeur of the species; that of the Brake is poor; that of the Hart's-tongue, stiff; whilst the Adiantum should have been taken in a hanging position. Ruta muraria, being taken while growing, is very good, as are also Asplenium Trichomanes, A. marinum, and Polypodium Dryopteris; but Polypodium calcareum is too slender, whilst the recurving of Lastrea æmula—here called by the ugly name Fœnisecii—is not well shown, and, as might be expected, the portrait of the Killarney Fern has little of its true grace. The plate of Ophioglossads is ill-arranged; but the woodcuts throughout the work are excellent, as is also the glossary. The table of the distinctive features of critical species on pp. 53—55 is an excellent idea. Something might have been said as to the variability of the Hart's-tongue, Lady Fern, and other species, and room might have been found for reference to Mr. Francis Darwin's interesting account of the glands of the common Brake (Journ. Linn. Soc., vol. xv.). As extreme dimensions are generally given in manuals, it may be of interest to mention that a specimen of this species has been measured 10 ft. 6 in. from the ground, in Bedfordshire. In spite of the blemishes mentioned, we can recommend this work to the notice of amateurs. G. S. Boulger.

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* "Kitchen and Market Garden." By contributors to The Garden. London Macmillan. 1877.

† "Ferns of the British Isles." Described and Photographed by Sy. C. London : Van Voorst.

KEEPING WALKS CLEAN.

No garden can be considered in proper condition unless its walks are, at all seasons of the year, free from weeds and littery matter of all kinds, and, at the same time, smooth, solid, and as dry as possible, walks with a loose or shifting surface being exceedingly uncomfortable to walk upon. A correspondent of The Garden (see p. 556) states that his walks are infested with weeds, and wants to know how he can best eradicate them. At the present season, or so long as the weather keeps open, the best way, perhaps, would be to have them pulled up by the roots, and in March next to turn the gravel, adding a coating of fresh material, then rake smooth and level, but keep the central part slightly elevated, and roll well down with a heavy iron roller. By careful hand-pickng walks may be kept free from weeds at all seasons. But during such wet and damp autumnal months as we have lately experienced it is quite impossible to prevent the surface becoming more or less discoloured by the development of minute species of Moss. With some kinds of gravel this is more likely to happen than with others; but it nevertheless often occurs in the case of the very best kinds, viz., that which contains a portion of loam or chalk, and which has a consequent tendency to bind or become solid. Where such walks are more or less near shrubs and trees, especially where they pass under branches of the latter, this tendency to become green during damp weather will be increased. It is, however, seldom desirable to break up, or turn the gravel of such walks more than once during the season, and the most suitable time to do this is in spring. When that has been done, select the earliest occurrence of dry settled weather during the month of April, or of May, to give a thorough dressing of dry salt; the longer this lies upon the surface, before it becomes melted by rainfall, and the more intense the sunshine during the time it so lies, the more effectual will be the application. Walks treated in this manner will not only be free from weeds and worm-casts during the remainder of the season, but their surface will retain a bright, clear, and cheerful appearance, and their solidity or firmness will be materially increased. Salt is sometimes applied to gravel walks and roads in a liquid state, or in the form of strong brine used quite hot, or as near the boiling point as possible. This is said to be very effectual in preventing the growth of weeds. Sundry other solutions are also recommended for the purpose. But I know of nothing more effectual than a liberal dressing of dry salt, sufficient to whiten the entire surface of the gravel. A slight sprinkling is of little use, and may even increase rather than diminish the evil which it is intended to cure. In applying such a dressing as has just been recommended, it is, of course, necessary to exercise caution, in order to prevent the salt coming in contact with the Grass, Box, or other plants, which may form an edging to the road or walk operated on. In the garden here, some walks which were salted early in the season, have been free from weeds ever since, and at the present time contrast very favourably with others, formed of the same materials, but which had not been salted. The surface of the former is clean and bright, while that of the latter is discoloured and dark. P. Grieve.

Culford.

—— "G." (see p. 556) would most effectually get rid of the weeds on his walks by using a solution of carbolic acid—say about ¼ lb. to 4 gallons of water. Apply it with a fine-rosed watering-pot, and carefully avoid touching the edgings of Box or Grass, as the case may be, for the liquid is sudden death to all vegetation. The walks may then be surfaced with fresh gravel, and weeds will not trouble him again for a long time to come.—W. W. H.

—— I would not recommend "G." to put any kind of salt on his walks, and then coat them over with gravel, when they are so much over-run with weeds as he says they are. It is very questionable if the salt would thoroughly destroy them; and if it did, there would be a layer of dirt left, with which it would not be wise to mix with the new gravel. When walks get in a bad state with weeds, the best thing to do with them is to take a draw-hoe and scrape every particle of the surface off, clearing it altogether away, then coat them over with fresh gravel. I have found this to be a better way of cleaning walks than any other which I have seen tried. Cambrian.

ROSES.

A FEW GOOD GREENHOUSE VARIETIES.

In a house here that is planted with Camellias, Roses—principally Teas—are planted out amongst them; some of them are against the pillars that support the roof, and are trained along the rafters, partly for shade to the Camellias; others are trained to upright poles until they get above the Camellias, when they are allowed to spread just as they like. The blooms which they furnish for cutting are extremely useful, coming in, as they do, when the Camellias are failing. The first to bloom is the White Banksian, which flowers early in March, and continues to do so until the end of April. It is generally in full bloom at Easter, a season when white flowers are in great request; few white greenhouse climbers can equal it at that period. It covers a large roof space. All the pruning which it gets is done when the bloom is over; then nearly all the shoots are cut back to the main stem, an operation which causes it to push strong shoots, from 6 ft. to 10 ft. long; these are allowed to hang down as they like, and the following spring they are covered with bloom during their entire length. Maréchal Niel is trained to the rafters, and does well, coming in after the Banksian. Cheshunt Hybrid is a good dark-coloured, highly-scented Rose, and one which makes a good climber, but it is late in blooming, not coming in until the Maréchal is nearly over. Gloire de Dijon does well, but its colour is not so fine indoors as out; Catherine Mermet is one of the best; Adam Bell, Lyonaise, Madame Sertor, Madame Willermoz, and Rubens all do well with me. I have tried several others, but, for some reason or other, they do not answer for greenhouse culture. Green fly does not trouble them much, perhaps because I use plenty of water at the roots and overhead, applying it in the latter case with the syringe. I have nearly always some buds fit for cutting. N.

Hereford.

Umbrella-shaped Rose Trees.—We grow most of our dwarf Roses on the long-rod system, viz., cutting out the old wood at the winter pruning, and retaining the strongest annual growths, which are pegged down, at certain distances apart, with long stout pegs, cut from the refuse Pea sticks. On the summits of the Rose-banks, standards of free-growing kinds, such as Charles Lawson, are planted and pruned in a similar manner as the dwarfs, the points of the shoots being tied to pegs driven in a circle round the tree. By this means they form regular-shaped and beautiful heads, for the shoots break regularly into growth from every eye, and when in bloom form beautiful objects.—James Groom, *Henham.*

Baroness Rothschild Rose, the Best Autumn Bloomer.—Amongst all the leading sorts of Roses, this one has bloomed most freely this autumn. There were some very fine flowers on it in October, and the last of them were not cut until the middle of November.—Cambrian.

Testimonial to Mr. Drummond.—Mr. James Drummond, who has been forty-nine years gardener at Blair-Drummond, being about to retire from active duty, a number of his friends, who esteem him highly for his professional ability and upright personal character, intend presenting him with a testimonial. Mr. Drummond is one of the veterans of the fraternity of practical gardeners, and well deserves some notice on retiring. Subscriptions will be received at the Union Banks of Stirling and Doune.—"Gardener."

It has come to this. In Holborn, opposite the Inns of Court Hotel, an ironmonger advertises, "The Gladstone Tree Feller." It seems to be a very ordinary kind of axe.—"Truth."

THE KITCHEN GARDEN.

KITCHEN GARDENING MADE EASY.

Let me now take up the subject of Onion culture, and I may remark at the outset that Walker's Thame Oxford is the best of its class, the bulbs being large and well shaped. I never trench for Onions; merely dig the land deeply, and manure heavily. The seed is sown in rows, 1 ft. apart, in the last week in March; thinning and hoeing receive attention as usual, and when the bulbs are ripe they are lifted and carted off the land, to be harvested. We then cultivate the land to the depth of from 4 in. to 6 in., and plant Cabbage in rows, 13 in. apart all ways. By the middle of June the greater part is used, and, when all are cut, we lift the stumps, rake the ground, and plant that most useful Broccoli, Veitch's New Protecting, and other varieties, for succession. The planting is done—in that simplest of all plans of planting, and I may add, the most effective—with the crow-bar. I never let a Cabbage crop stop for the sake of the sprouts, which, I admit, are always plentiful; but they form such a harbour for slugs and caterpillars, and all the ills that a garden is heir to, that they are best out of the way. By sowing Coleworts in the middle of July, and planting them out after the Potatoes are off, 9 in. apart, one can cut as often as required really good little heads, which for flavour stand in the first rank amongst Cabbages. This makes three crops with only one digging. The site in question is again manured, and laid up roughly for early Potatoes.

Burghley. R. Gilbert.

—— Kitchen Gardening made Easy! The Gardener's Millennium would seem to be at hand, kitchen gardening being invariably the hardest work with which gardeners have hitherto had to contend. Therefore, when one of our greatest authorities on kitchen gardening proposes to diminish our labour in that department one-half, it may be as well to have a clear understanding before commencing our next campaign, as Mr. Gilbert calls it. With the directions for the first season's cropping I entirely agree, as Peas like deeply cultivated and well-enriched land, and the whole of the Cabbage tribe do best on solid ground; but, after a crop of Brussels Sprouts, the soil, owing to frequent tramplings in all weathers in gathering the produce, will be as hard as an ordinary footpath; therefore, will Mr. Gilbert recommend us an easy method by which the land may be properly prepared for Potatoes, or put in such condition as he would consider the best for ensuring good results? Easy modes of culture all of us would appreciate, but we also want good crops. Surely Mr. Gilbert never plants Potatoes, more especially Early Kidneys, in hard, unbroken ground, and whether digging is performed with a spade, or by means of a cultivator, matters little, as far as saving of labour is concerned, as I feel satisfied that the operator who pulverises land deep enough for Potatoes with a cultivator would not term the operation easy work. For several years past our spades have not been so constantly in use as formerly, as Parkes's Steel Digging Forks do the work much better. I need scarcely remark that Carrots delight in loose friable soil; in fact, their quality is determined to a great extent by the character of the soil, a rather poor, sandy, loose soil, that cannot be compressed into a solid mass, producing better Carrots than heavy clay lands would under the best of culture. Economy of labour in our gardens is a question deserving the highest consideration, and all of us must feel grateful to Mr. Gilbert for any remarks which he may make tending to effect that desideratum. But, from his own description of the routine of cultivation adopted at Burghley, and the well-known success that attends his management there, I am of opinion that the stirring with the cultivator which he describes, is quite equal to ordinary digging, and that any one undertaking the operation on stiff, adhesive soil, after a crop of Brussels Sprouts, would come to the conclusion that Kitchen Gardening Made Easy was a somewhat ambiguous term.—J. Groom, *Henham.*

—— I do not consider that Mr. Gilbert is quite correct in stating that Strawberries, Broccoli, Celery, and Potatoes are grown without digging the ground. Admitted, the ground is well trenched for the Strawberry crop; Broccoli follows without further spade-work, and a first-rate plan it is; but I think the working of a Celery crop —first taking out trenches, afterwards earthing up, and finally digging up the crop—is almost equal to a trenching of the ground instead of digging, leaving the land in good order for almost any other crop. It therefore seems to me that the Broccoli crop is the only one produced without digging the ground.—J. M., *Winslow.*

Giant v. Dwarf Celery.—The past season has been an exceptionally favourable one for the growth of Celery. We find Incomparable Dwarf White, if procured true to name, unsurpassed for general purposes; it is not, perhaps, adapted for growers for sale, as, when bundled for market, it is small in comparison with Harrison's Leicester Red, Lion's-paw White, and similar varieties; but, when dressed for the table, either as a salad or as a cooked vegetable, it is all that can be desired. The heart is very solid and compact, and the outer leaves short and sturdy, so that when carefully blanched there is little waste in comparison with that which occurs in the case of long, straggling-habited kinds. Where the kitchen garden is of limited extent it is of the first importance to grow varieties of vegetables that will attain perfection in a limited space, and, as Celery forms an important item in kitchen gardens, a variety like this is invaluable. The principal point as regards Celery culture is to avoid all kinds of checks to growth, by sowing for the main crop, in very gentle heat, in March or April, and pricking out the young plants, as soon as they are large enough, in beds protected by spare lights. Thus managed they make fine, sturdy plants by the end of May, when, if not checked through lack of moisture, there will seldom be any loss from running to seed or from any other cause.—J. Groom, *Henham.*

DANDELION SALAD.

Possessing, as I do, very decidedly "phytophagous proclivities," I was glad to see an article by Mr. Dennis (p. 529) on this subject. But does he mean that one may cut leaves from plants growing wild "from November to March," and eat them dressed in the manner described? Is it not the case, that they require to be blanched with a slate or tile, like Endive, before they are at all palatable? Again, is it not probable that they would be more tender and agreeable during the summer months? Whether eaten green or blanched, there is, without doubt, one period of the year at which they are at their best, and another at which they are at their worst, and it would be interesting to salad eaters to have information upon these points. Mr. Dennis has done good service to lovers of vegetables in their uncooked condition, by directing attention to the importance of drying the surfaces of salading before adding the dressing. He recommends using a towel; some cooks swing the "green food" in a Cabbage-net, whirling it through the air with great speed, and thus removing all superfluous moisture. I should never be surprised to learn that our ingenious American cousins have invented a centrifugal machine for drying salading as they do clothes. There is one important point which requires notice in your correspondent's account of the manner in which he dresses Dandelion salad. He says, mix pepper, salt, and vinegar, "which pour equally over the salad, then add more vinegar, and lastly the oil." It cannot be too often repeated, that vinegar makes vegetables flabby, while oil keeps them in a fresh, crisp condition. Hence, no salad of any kind is worth eating five minutes after it has been made unless it has been dressed with oil first. The cut-up salad should have a very little Olive oil (not flask oil) poured over it, and then be well tossed and mixed with a wooden spoon and fork; when this has been properly done, every part of the salad will be greased with the oil rather than oiled, and there must be no oil left at the bottom of the salad bowl. Afterwards, any kind of dressing may be poured over the salad, merely bearing in mind that oil and vinegar will never mix, unless the oil has first been incorporated with mustard, hard-boiled egg, or some other thick substance. W. T. T.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Peas from June to December.—We gathered our first Peas here on 30th June, and our last dish we had yesterday—a good quantity and very good. Some were of the sort called Ne Plus Ultra, and some were the produce of seed saved from the first crop. They were sown early in August. The plants when pulled up on Saturday still had blooms upon them. They were entirely free from mildew.—J. P.

Blanching Endive.—After trying various ways of blanching Endive, such as putting a slate over each plant, turning a flower pot upside down on them, and laying a board on the top of each row, I find that none of these plans answers the purpose so well as lifting the plants with good balls attached to them, packing them as closely as they will stand in cutting boxes, and then setting them in a dark Mushroom house. Thus treated, in ten or twelve days, every leaf becomes white, and they do not decay as they do outside. A dark cellar would no doubt blanch them equally well.—Cambrian.

Veitch's New Protecting Broccoli.—I had an opportunity last week of seeing a large breadth of this Broccoli growing at Warnham Court, and a finer plantation of the kind I never saw; the heads were from 8 in. to 10 in. in diameter, very solid and compact, and well protected by the foliage. The seed from which they were raised was sown the second week in April, and when large enough the produce was planted out between rows of early Peas, and when the Peas were cleared off their place was filled with Snow's Winter Broccoli—which promises to form a succession to the above. Veitch's Autumn Giant Cauliflower has also been wonderfully fine this season.—R. Harris, *Horsham.*

A COUNTRYMAN ON "KILLED SEED."

A field o' young turmuts is gay to behold,
When 'tis yaller all over wi' patches o' gold.
But 'taint all gold glitters like sunshine so bright :
That there's charlick, unlucky in husbunmun's sight.

And the grain-crops, so plenty as sims on some ground,
When they comes to be ripped med poor projuice be found.
Barren wuts to bad farmun be like to be doo ;
Likewise charlick unlucky though smilun' to view.

But when crops, root or grain, comes up scanty and thin,
Or broke out in bear spots like a mangy dog's skin,
'Taint the fault o' sitch tillidge as 'counts fur the weeds ;
On the best land no shoots wun't come up from dead seeds.

The sower med goo forth his seed for to sow ;
But the live seeds is all o' the kit as 'ool grow.
'Tis from they that red poppies and carn-flowers prevails ;
But dead seeds be like dead men—they doan't tell no tales.

Now the dalers in seed has devized a deep thing ;
Mixes up with live seed seed killed dead as wun't spring.
For they goes and they bakes it that no weeds med rise,
And bear witness agin 'um to nobody's eyes.

To cotton and cloth we know'd tricks was applied,
And we knows, too, that silk's mixed wi' stuff when 'tis dyed.
Looramassy, how Progress in craft do proceed !
There 's a spacies o' shoddy now mingled wi' seed.

Rogues be rogues, to be sure, aitch and all o' one strain ;
But the wust rogues for farmers be them rogues in grain.
To chastise sitch offenders no fines won't prevail.
For their potion I 'd gi'e 'em hard labour in gaol.

In the good times of old, rogues like they, up and down,
At the cart's tail 'd been properly whipped droo the town,
And then set in the stocks their misdeeds to requite,
Or stood in the pillory, and sarve 'um aright.

For the tricks o' the Seed Trade 'oodst make theeself match ?
Thee goo, and thee get thee an old flannel patch
From out of a blanket the Missus med spare,
Or a petticoat as she no longer wed wear.

Soak in water loo-warm, nigh the vire let 'a stand,
Then a hotbed in little thee 'st got to thy hand.
Sow thy seeds in 't, all counted ; the live uns 'ool sprout,
By the dead, which they won't, the deceiver's found out.

Whensoever I that there ixperiment tries,
'Tis from few seed I finds as e'er sprouts fails to rise.
For I knows honest folks, and I dales where I knows :
That's the way for a feller to rip as 'a sows.

—"Punch."

Ageratum Countess of Stair in Winter.—Where cut flowers are in demand, this Ageratum I find to be very useful at this season of the year. Cuttings of it put in the first week in September, on a slight bottom-heat, will strike root in a few days, when they should be potted off, or better still, transplanted into small boxes 4 in. or 5 in. apart, and afterwards encouraged to grow, pinching out the centres, when each plant will throw out about half-a-dozen shoots from the bottom. When 3 in. or 4 in. high, the boxes should be removed to some sunny situation in the open air, where the shoots will get a little woody before the plants are moved indoors, which should be done before frost sets in. They should be placed on a shelf in the greenhouse, where they will get plenty of light and air, when each shoot will produce an enormous head of bloom of a lovely pale blue, a colour not very plentiful at this season. When done flowering, if placed in a little heat, they will produce abundance of shoots, from which to propagate bedding plants; and I may add that this variety of Ageratum is the best blue-flowering bedding plant with which I am acquainted, and one which looks bright even in wet weather.—Thos. Spelman, *Derry Castle.*

Mr. Joseph Wheeler, for fifteen years gardener to the late J. Philpot, Esq., of Stamford Hill, and during that period a successful exhibitor of stove and greenhouse plants, at the Royal Horticultural and Botanic Societies, and occasionally elsewhere, has been appointed gardener to Sir F. H. Goldsmid, Bt., M.P., Bendcomb Park, Cirencester.

Roots at the Smithfield Show.—At this show finely grown Potatoes, Turnips, Carrots, and Mangolds were shown in great quantities, by Messrs. Carter & Co., Sutton & Sons, Webb, Harrison, Gibbs, and others; and good examples of produce grown with the aid of Amies' chemical manures were also exhibited.

QUESTIONS AND ANSWERS.

Covering for Cold Pits.—What is the best covering, at a moderate cost, for cold pits in winter? Something warm and waterproof is required. Archangel mats, covered with waterproof cloth, answer the purpose very well; but, if the waterproof cloth be new, it is very costly, and if it be bought second-hand, cut from old rick-cloths, I find that all its goodness is nearly worn out. The Malabar Thatch Mat looks to me as if it might be useful, but is it found to answer? The thought occurs to me that in use it might be too brittle.—W. B. L.

Eradicating the Brake (see p. 530.)—Many years ago I was informed, by the late Mr. Edward Newman, that the Brake may be eradicated by repeatedly mowing off the young fronds when only 3 in. or 4 in. high; and that, by doing this as often as the fronds appear, the rhizomes will be "bled to death" in one season, and the plant killed. I cannot imagine that anyone, who understands the mode of growth of this Fern, would expect to eradicate it by mowing it in the autumn.—W. T. T.

Epiphyllums after Flowering.—Can you inform me whether the ends of Epiphyllums that have bloomed this season should naturally fall of; and, if they do not, whether it is necessary to break them off to the first joint? I have noticed that they remain on till the following autumn and then fall off; but if they do not come off they prevent, I think, fresh growth being made. Any information would greatly oblige.—Y, X. [If you mean the stalks of the flowers, it is immaterial whether they fall off or are cut away; for, if the plants are strong, they will break into fresh growth at every joint, whether cut back or not.—T. B.]

Wintering Pelargoniums.—I have often seen Pelargoniums hung up in a cellar as "W. W." mentions (see p. 556), but I never saw them do any good afterwards. The best way of wintering old Pelargoniums is to lift them, cut all the long roots off, and all the shoots into the first or second bud or leaf from the main stems, and then pack them into any old cutting boxes, covering the roots with a little soil. Give them one good watering, and then they may be wintered either in a loft, dry shed, or greenhouse. They keep capitally in this way without taking up much room, and being so hard cut in they make fine dwarf bushy plants in spring.—Cambrian.

Sowing the Corsican Pine.—I have just received some seeds of Pinus laricio, from the forest of Valdoniella, in Corsica. Had I better sow them at once in boxes, or keep them until the usual seed sowing season? I also have some seed of the Alnus cordata, about which allow me to make the same enquiry.—J. M.

Early Melons.—Will any practical reader of The Garden kindly inform me which is the best moderate-sized green-fleshed variety for very early work?—Wm. R.

Begonia Frœbeli.—Will Mr. Clews (see p. 513) kindly state the *modus operandi* by which he has succeeded in raising a stock of this from seed?—Wm. M.

Mildewed Grapes.—What is the best plan of preventing ripe Grapes from becoming covered with and spoilt by mildew? On Saturday last I had a house full of magnificent bunches of Black Hamburgh, perfectly ripe, and also of one or two other kinds, equally ripe; but on Monday morning, when my gardener came to gather a quantity, he found that nearly all the Black Hamburghs were covered with mildew and spoilt, but that none of the others had then become affected—nor have they since. So sudden a collapse has quite taken me by surprise, and I cannot account for it, excepting that Sunday was a very wet day, and the rain at times was almost like a water-spout. We keep the house slightly warm and dry, with a little sulphur on the hot-water pipes; but the roots (which are outside the house) had no protection, and I fancy the wet had penetrated down to them and has caused all this mischief. I shall feel much obliged if you can tell me how to save the remainder, and prevent a recurrence another year.—A Regular Subscriber. [This case shows the necessity of always being on the watch for the appearance of mildew, for, no doubt, it had been on the Vines some time before it was noticed, but the dull, wet Sunday would, of course, accelerate its progress. Nothing can now be done to save the Black Hamburghs; but, to prevent the disease spreading to the others, sulphur should be applied at once, and the best way is by the syringe. Choose a dry day, and fire up well, so as to heat the pipes, and ventilate freely. Then mix sufficient sulphur in a little milk till it is thoroughly disintegrated, and pour it into a pitcher of clean water; keep it stirred up, and syringe the Vines and bunches till they are thoroughly drenched in every part. If the day be dry, the pipes hot, and the ventilators open, the Vines and fruit will dry in about a couple of hours without being anything the worse, except that the berries will be covered with sulphur dust, which, however, will brush off easily with a camel's-hair pencil before the fruit is used for dessert, and, in the case of late Grapes, without injuring the bloom. This is a desperate remedy, but it is the only one likely to succeed. Afterwards keep the house cool, and perfectly dry, and ventilate a little—always keeping a little heat in the pipes as well. If, as is stated, the crop of Grapes is "magnificent," it is hardly likely the roots are in a bad state; but, if the foliage be still green, and the wood not well ripened, it may be desirable to drain the border more thoroughly. It may be stated that the above plan has been tried upon ripe Grapes with the most complete success, but the disease had not made such serious progress. In winter, after the fruit is cut, clean and wash the Vinery; paint the Vines with sulphur, and watch for mildew next summer, and apply sulphur freely on its first appearance. It almost invariably appears on the upper sides of the leaves first, and then attacks the fruit.—J. S.]

No. 318.] SATURDAY, DECEMBER 22, 1877. [Vol. XII.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

A CHRISTMAS DINNER-TABLE.

MOST people at Christmas time surround themselves with their relations and friends, and make Christmas week quite a little festival; but the principal day, I need hardly remark, is Christmas Day itself. I shall therefore give a description of the floral arrangements of a dinner-table suitable for that day, leaving my readers to use their own discretion as regards table-decorations during the remainder of the week. At this season, as a rule, scarlet and crimson are the favourite colours; therefore, I shall select crimson and white as the prevailing tints in my arrangement. Let us suppose the table to be of a moderate size to hold say about twenty people; I select a table of this dimension, as if required larger, the same decorations, if placed a little wider apart, and with the addition of a few specimen glasses or small vases, will do equally well. In the centre I should place a large-sized plant of Cocos Weddelliana, with flowers round its base; at each end I should place a similar plant, or any other light-growing Palm in the same style, also with floral arrangements round its base. Between the centre piece and each end plant, I would place a vase, in form consisting of a trumpet rising out of a flat tazza; then round the centre piece I should group four glass baskets, and opposite to each person I would put a specimen glass containing a coat flower and a lady's dress bouquet alternately. I will presume that the decorator does not care to place the plants through the table, so I shall not enter into details as to how that should be managed. Select plants of graceful growth; what I mean by this, as applied to Cocos, is plants well balanced and not one-sided. This Palm, I need hardly remark, is one of our most graceful table plants, but its form is often spoiled by being cut where it looks a little faded; discoloured leaves, however, which show to disadvantage by daylight, are often unobservable when subjected to artificial light. Each of the plants should be placed in circular zinc trays, made for the purpose, about the size of the lower dish of a large March vase, that of the centre piece being larger than those at each end. The space round the pots should be packed with Moss, well damped, so as to represent a green mound from the edge of the tray to the top of the pot. Having got the three trays, with the pots packed in each, in their respective places on the dinner-table, the next thing to set about is the floral dressing round their bases, beginning first with a fringe of mixed varieties of Ferns placed so as to fall, or rather lay, out lightly on the table-cloth. I should intersperse fronds of golden varieties through those round the centre piece, and arrange them so that the golden or undersides of the fronds showed up; a few silver kinds would look well amongst those round the end plants. Next, as regards the flowers; well, round the centre plant I should be tempted to arrange the following blooms, viz., Arums, Poinsettias, Roman Hyacinths, Azaleas, scarlet Begonias, and Maiden-hair Fern, and twined up the stem of the Cocos a few sprays of Lycopodium scandens; the two end arrangements I should make match, and in their adornment use white Camellias, Poinsettias, scarlet Pelargoniums, white Heaths, Primulas, Hyacinths, Maiden-hair Fern, and up the stem Lycopodium scandens; the two vases should have very light-growing Ferns round the edges of the tazzas, and in the tazzas themselves nothing would look better than Eucharises, white Primulas, scarlet Pelargoniums, Roman Hyacinths, and Maiden-hair Fern; while in the trumpets I would place plume-like arrangements of scarlet Begonias, Lily of the Valley, and Maiden-hair Fern only. The four small glass baskets I should fill with sprays of well-berried Holly, and round the handles twine sprays of small-leaved variegated Ivies. Any flowers generally employed for button-hole bouquets will be suitable for the coat flowers and dress bouquets. In the way of fruits I should have a Melon, Pine, black and white Grapes, Pears, Apples, Walnuts, and Filberts, with the addition of crystallised and preserved fruits, ice, &c. In the finger-glasses, three small leaves of Mrs. Pollock or Lady Plymouth Pelargonium, with a single pip of scarlet Pelargonium pierced through the centre of each, have a pretty effect floating on the water. ANNIE HASSARD.

Vases and Gardening.—A friend, who has good opportunities of judging, tells us of the mistaken use of vases now made in country seats by certain "fashionable" landscape gardeners. Vases of terra cotta and artificial stone, often of poor design, are dotted about so thickly in situations unfitted for them as to destroy all repose and all good effect. Vases well placed, and well filled, of good design, may, and sometimes do, form a beautiful feature in a garden; but there are many beautiful gardens in which not one vase is seen, and many extensive ones in which half-a-dozen would suffice. Where the nature of the ground necessitates a terrace or a wall, the lines of these are better for being broken by the graceful forms of vases. It is even then well to be sparing as regards their use; but, where the nature of the ground does not furnish opportunities for their use, to scatter a leprosy of vases about is one of the worst of blunders in landscape gardening. The effect reminds one of the Euston Road displays of statuary ware; only in making the comparison, it is fair to remember that the owners of these displays have a reason for showing them which the country gentleman cannot plead. In the variety of advice that is offered, it is difficult often for a country gentleman to decide what is best, but one thing we think he may be assured of, and that is an extensive display of terra cotta and like rubbish has nothing to do with either good gardening or good art.

NOTES OF THE WEEK.

Kew.—Several Aloes in the collection at Kew are now in bloom. These large-growing Liliaceous plants are very striking, and, apart from the importance of several of them from an economic point of view, are worthy of notice on account of their peculiar style of growth and handsome spikes of reddish flowers. Humboldt says that the Liliaceæ is one of the vegetable forms by which the aspect of Nature is chiefly determined. In many places in the Tropics, where some of the Aloes occur in great abundance, they impart a peculiar and unique character to the landscape. A. arborescens, A. pluridens, and A. platylepis (all from the Cape of Good Hope) have flowers resembling each other, but the leaves vary considerably in form and size. A. ciliaris makes a pretty pillar or rafter plant; its small ciliated leaves and short spikes of orange-red flowers are very beautiful. Rhipsalis salicornoides affords an excellent example of mimicry in members belonging to two widely-separated Natural Orders. This Brazilian Cactaceous plant has succulent, jointed, leafless branches, much resembling the Marsh Samphire of the sea coasts and salt marshes of England. The little yellow flowers are terminal, and, when the sun is shining (for they remain closed during dull weather), are very pretty.

In the centre of the No. 1 or Aroid-house is a good-sized specimen of Brownea coccinea, a very handsome Leguminous tree from Venezuela; it has pinnate leaves, and pendent, Rhododendron-like heads of scarlet flowers. It is well worth a place in any stove where room can be spared for it. All the Browneas are splendid plants, and the colouration of the young leaves, when first developed, is most pleasing and effective.

The following three plants in the Palm-house claim our attention:—First is an East Indian Jessamine (Jasminum hirsutum). The thick-set, deep green, simple, hirsute leaves, and the large bunches of very fragrant, snow-white flowers contrast admirably, and render the species a most desirable and attractive one. Considerably more than a century has elapsed since its introduction to English gardens; but, at the present time, it seems far from common. Hoplophytum calyculatum, a pretty Bromeliad from the interior of the province of Santa Catherina, in Brazil, has a dense capitulum of citron-yellow flowers borne on a scape nearly as long as the leaves. Like most of the Bromeliads, this is of the easiest cultivation. Pittosporum zeylanicum is an evergreen shrub, with greenish-white flowers, the great number and sweet scent of which make up for deficiency in brightness.

Vaccinium erythrinum—introduced by Messrs. Rollison, from Java, in 1852, is now in flower in the Winter-garden. It is a compact, handsome, evergreen shrub, the young branches, as well as the petioles and mid-ribs of the leaves being red, and the terminal clustered racemes bearing drooping reddish-purple flowers. Phylica ericoides is a Rhamnaceous bush, from the Cape of Good Hope, which was cultivated by Philip Miller, in 1731; it is of neat habit, and the little white flowers are slightly odoriferous. We are told that about Lisbon this plant has naturalised itself and covers considerable tracts in the same manner that Heath does in this country.

Leucopogon Cunninghami and L. lanceolatus are two graceful greenhouse shrubs from Australia; they have neat foliage and drooping spikes of small white flowers. Both may be seen in No. 4, and are well worth a place in every collection of cool-house plants.

Aphelandra nitens is in flower in the stove. The beautiful metallic polish of the upper surface of the leaves and the dark reddish-purple of the under combine with the bright scarlet of the corollas to make this species one of the most handsome of all the Aphelandras; it is a native of Guayaquil in New Grenada, whence it was sent to England by Mr. Pearce, when collecting for Messrs. Veitch.

Several distinct shades of colour may be observed in different plants of that splendid little epiphyte, Sophronitis grandiflora. The vivid orange-red flowers of Masdevallia Veitchiana, being flushed with purple, are very striking. M. ignea and M. amabilis have similarly shaped flowers, and, though not so fiery as M. Veitchiana, are equally vivid in colour. Nearly all the Masdevallias come from considerable elevations on the Andes of Peru and New Granada, and, consequently, require a cool and constantly humid atmosphere. Not many years ago, but very few species were known; now, not far from a hundred are to be found in cultivation. Almost, without exception, they are strikingly beautiful little plants, and a good collection might be grown in less room than that occupied by three specimens of some of the larger growing Orchids. Dendrobium formosum is a magnificent species with very large flowers—white, with the exception of a yellow blotch at the base of the lip. D. heterocarpum has cream-coloured petals and sepals, the lip being deep, almost golden, yellow, streaked and veined with reddish lines. This is a handsome and fragrant species, and was received at Kew from Assam in 1852.—†

Enormous Shaddocks.—Messrs Garcia have in their windows, in Central-row, Covent Garden, Shaddocks that remind one of the King of the Pumpkins. We had no conception that any of the Orange tribe could bear such large fruit. They weigh 8 lbs. each, and come from the West Indies.

New Potatoes.—On the 7th inst., at Biarritz, a friend provided me with a good sample of new Potatoes for dinner, taken from the open ground. The seed was planted in August last.—W. N.

Narcissus Clusii.—This pretty Hoop-petticoat Narcissus is now finely in flower in the Hale Farm Nurseries, Tottenham. Bulbs of it were planted in August last year in a temporary frame and light sandy soil; and the abundance of bloom which they are now producing shows the advantage of planting in time for the bulbs to make good growth and become established during the summer. Imported bulbs, though planted immediately they arrive, cannot be expected to flower well the same year.

Dendrobium Wardianum.—A plant of this magnificent Dendrobe, now in bloom here, has upwards of sixteen flowers on one growth. The plant is one of recent importation, and the flowers are individually much larger than those of the ordinary type, being 4 in. across.—William Cottrell, Jun., *Eccles Old Road, Pendleton.*

Iris alata.—This lovely Iris is now flowering beautifully at Tottenham. The greatest drawback to its culture is the flowers being spoilt by soil-splashings during heavy rains. If, however, the bulbs were planted among Stonecrop, or in Grass, on warm sheltered banks, their pale blue blossoms would remain uninjured, and would prove a source of attraction when our gardens are comparatively flowerless.

Migration of Plants.—In a part of Holm Fen, near the Great Northern Railway, are springing up, apparently spontaneously, hardy Heaths of several species. Years ago the land was under water, but is now well-drained, and will, no doubt, in the course of time, be brought into cultivation. I mention this as an instance of the way in which Nature clothes bare surfaces with what is perhaps the fittest covering for the time being. But the question that rises uppermost in the mind is, how did the seeds or plants get there? For there are no such plants within miles of them. Have they been transported thither by water, or wind, or how?—E. Hobday.

A White Odontoglossum Alexandræ.—A plant of this is now in flower in Mr. Day's garden at Tottenham. Its petals are broad and full, and beautifully imbricated, and as white as driven snow, not a shade of any other colour being visible except the rich golden eye. For the spotted variety this makes a charming companion.

With the next number of The Garden, the last of the year, the Index, &c., and an engraved portrait of Mr. James McNab, of the Royal Botanic Gardens, Edinburgh, will be published in the form of a supplement of 16 pages.

Foreign Edition of "The Garden."—An Edition of The Garden is now printed every week on thin paper for transmission to foreign countries. In this manner the weight is kept within that allowed to be sent to all countries within the "postal union" for one penny. This will facilitate the distribution of the paper in America, the Colonies, and on the Continent.

Eucharis candida.—Specimens of this beautiful plant are now flowering freely in Mr. Bull's nursery, at Chelsea. With the value of E. amazonica for bouquet-making, every one is acquainted, but for some purposes this small flowered kind is even more suitable. Associated with it are well-flowered specimens of E. amazonica and Pancratium speciosum, three of the best and most sweetly-scented tender flowering plants in cultivation.

Angræcum sesquipedale.—Several large, healthy plants of this Orchid are now rapidly opening their blossoms in Mr. Williams' nursery at Holloway. A singular circumstance connected with this Angræcum is that from the time the tails of its flowers commence to develop themselves until they have done growing, they are in perpetual motion, doubtless the result of rapid growth and a strong flow of sap.

A New Belgian Grape.—We have a portrait showing a large, handsome Black Grape, called Muscat Charles Alberdienst, now being sent out by Mr. C. Alberdienst (30, Rue des Douze Chambers), Ghent, Belgium. We know nothing of the fruit; its introducer describes it as one of the best varieties known. The plate shows a large, handsome, tapering bunch, resembling a Dutch Hamburgh.

Odontoglossum Roezli.—One importation of about 2,000 plants of this beautiful Orchid has just arrived at Messrs. Veitch's nursery, at Chelsea. Each of the plants were fastened with wire to pieces of wood, and stood upright in deep boxes, with small strips of wood between each row to keep them from moving, and although they have been on the journey over six weeks their foliage is as fresh and healthy as if just gathered; a white variety has pushed into flower on the way.

Garrya elliptica in Pots.—This pretty winter-flowering, hardy shrub makes a good pot plant for the cool conservatory. We lately saw a quantity of plants of it in pots in Messrs. Osborn's nursery at Fulham, which were literally laden with pendent racemes of blossoms. In vases, or on pedestals, such plants are very ornamental, and last uninjured for a long time, provided they are not subjected to a very warm temperature.—S.

Odontoglossum crispum.—One of the best varieties of this lovely Orchid which I have seen this year is now in flower in Mr. Bull's nursery, at Chelsea. On one spike, which is gracefully arched, are nearly twenty large, crisp, waxy, beautifully-coloured blossoms. The plant in question is only a small one; what, therefore, may we not expect from well-established examples of it grown beyond the reach of London smoke?—P. W.

Luculia gratissima in Small Pots.—Young plants of this beautiful greenhouse shrub, in Messrs. Osborn's nursery at Fulham, are now especially attractive. They were struck from cuttings just before the flower-buds showed themselves, and the result is neat plants, from 6 in. to 8 in. in height in 5-in. pots, surmounted by a large head of deliciously fragrant blossoms. The Luculia, being somewhat difficult to convert into a bushy specimen, a good effect might be made by placing eight or ten plants, similar to those just alluded to, in a deep pan or pot just as they showed flower.

Odontoglossum Uro-Skinneri.—Few Orchids last in flower for so long a period as this. Its flower-spikes, which often reach 5 ft. in length, continue to grow and bloom for several months in succession; the blossoms themselves, too, keep in good condition for a long time in a cut state. It is a cool-house Orchid, easy to grow, and should be found in every collection.

Lælia carminata.—This, though seldom seen, is one of the most attractive of winter-flowering Orchids. Its blossoms remind one of those of a Bougainvillea, as far as colour is concerned, but they are much more delicate in texture. Good examples of it are now in flower in Mr. Day's collection at Tottenham.

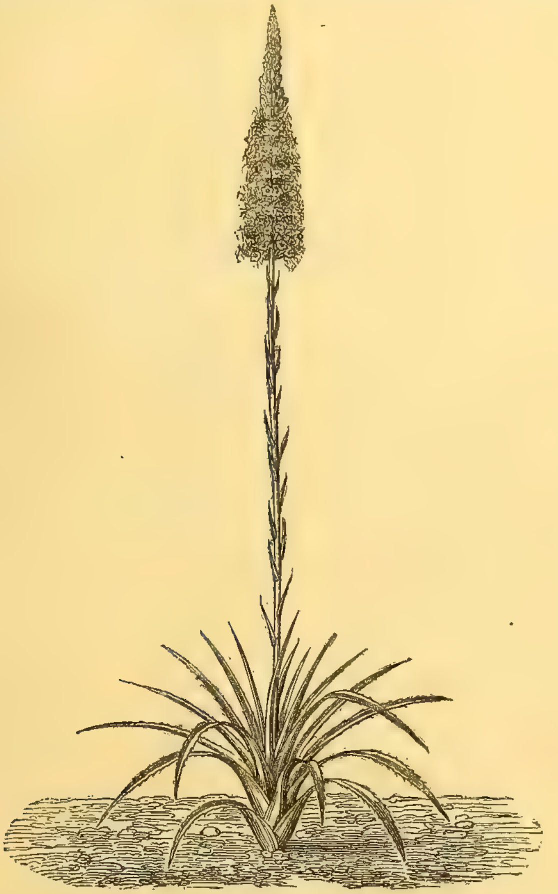
Gentiana acaulis in Pots.—Flowering plants of this Gentian have lately made their appearance in Covent Garden Market. Considering the easy culture of this plant, and the length of time during which its blooms last, it is surprising that it is not more extensively grown in pots than it is for the decoration of the cool greenhouse or conservatory at this season of the year. If good plants of it be divided in spring and each piece be planted out in good sandy soil and leaf mould in a sunny situation, they will make good-sized plants by autumn, when they may be lifted and potted in 5-in. pots, well watered, and placed in a shady situation until again established, when they may be placed in a cold frame to which plenty of sun and air are admitted. When in flower they may be removed indoors, and if a little weak guano-water be given them once a week they will continue to grow and flower all through the winter. In spring they should be again planted out and treated as before.—S.

Angræcum bilobum.—This, one of the prettiest of small-growing Orchids, may now be seen in flower in Messrs. Veitch's nursery at Chelsea. It bears pure white, waxy, star-shaped blossoms which last for a long time in good condition.

Bolbophyllum odoratissimum.—This pretty little Orchid, now rarely seen, is at present in flower in Messrs. Veitch's nursery at Chelsea. Its blossoms are perhaps more singular than handsome; but they are very sweetly scented, and on this account are largely used by the Burmese ladies in the decoration of their hair.

The Exhibition of the Pelargonium Society for 1878 will be held in the gardens of the Royal Horticultural Society at South Kensington, on Tuesday, June 18, in conjunction with the Rose show to be held on that date. The schedule is now ready, and includes thirty-four classes, in which the prizes amount in the aggregate to £111. It may be well to remind cultivators that members only can compete.

Agave yuccæfolia.—This is a narrow and curved-leaved spineless plant, lax in growth, attaining a height of about 2 ft. The leaves are about 2 ft. long, and dark green, with brownish spots on their under sides. When well grown, it makes a good and useful bracket plant; the flower-spike is slender and graceful, and the plant generally has more the habit of a Yucca than that of an Aloe.—J. Croucher.



Agave yuccæfolia.

Poinsettia pulcherrima.—This may now be seen in such quantities, at Old Sneed Park, near Bristol, as to produce quite a dazzling effect. Large quantities of it were struck in July and August, and grown on for flowering in small pots, which are useful when the plants are wanted for house decoration, and the restriction of the roots keeps the plants dwarf. Those in question vary from 6 in. to 18 in. high, and their scarlet whorls of floral leaves measure from 17 in. to 18 in. in diameter. Many larger specimens may also be seen at the same place, with whorls of bracts that measure fully 23 in. across, and there are as many as forty-eight in a whorl, and thirty-six whorls on a plant. Is not this an unusually good result?—E. M.

New Kind of Christmas Trees.—A new sensation might be made in many households this Christmas if the stereotyed Spruce Fir were ignored for the children's party, and well-shaped pyramid Holly, all aglow with rich scarlet berries, substituted in its place. Many thousands of these in nurseries are this year literally covered with berries, and as, in all well-ordered establishments, these are annually transplanted, they have a compact bunch of roots instead of the few long, woody roots usually found on the Fir. Instead of being placed in the heavy, clumsy flower-pot, they should be planted up in neat, round wicker baskets, lined inside with Moss to prevent the soil from passing through, and be also dressed over the surface with Moss. The basket and its dressing of Moss would afford many vantage points for the fixing of the tiny ornaments, whilst in dressing the tree care should be taken rather to make its berried beauties prominent than to overburden it with tawdry decoration. There is room for the development of taste even in this small matter.—A. D.

Two Rapid-Growing Trees.—Three-year old trees of Alnus Oregona, range up to 10 ft. high. In general appearance this tree does not materially differ from A. glutinosa, but in rapidity of growth it far surpasses it. Three-year old trees of Fraxinus Oregona range up to 6 ft. high. The foliage of this is somewhat larger and brighter than that of the Common Ash, and the bark of the young shoots is black and shining. These trees would, probably, not be quite hardy in the colder parts of England, or perhaps in some few central spots in Ireland, but here, within six miles or so of the sea, they grow freely. A rather curious circumstance connected with them is that, this last summer, though very wet and cold, the Ash has grown much more than in the previous summer, which was much warmer, whereas, quite the contrary is the case with the Alder, which has not grown this season much more than half what it did in the previous one.—T. Smith, *Newry.*

NOTES AND QUESTIONS ON TREES AND SHRUBS

Garrya elliptica.—Several fine specimens of this, the most beautiful of all evergreen winter-flowering shrubs, growing against a wall in the Wood Lane Nurseries, at Isleworth, will shortly present a striking appearance, they being now heavily laden with long pendent catkins full of flower buds.—S.

Birds and Holly Berries.—Hollies as a rule are this season loaded with berries, but the birds have already begun to take them; a good sized bush of the latifolia that ripened its fruit very early, and was particularly bright and beautiful, has now not one berry upon it. I never remember to have seen birds attack the Holly before, until driven to do so by hard frost and snow.—T. Smith, *Newry.*

Standard Euonymus.—All the variegated leaved varieties of Euonymus make interesting and useful plants when grown in the form of standards on clean stems, from 2 ft. to 3 ft. high. Numbers of them are grown in this way in Messrs. Lee's Nursery, at Isleworth. All the kinds, including the silver leaved E. radicans, are grafted on stocks of E. europeæus at the desired height; they make bushy heads quickly, and when planted in beds or on lawns are handsome objects.—S.

The Holly and Mistletoe Season in Sherwood Forest.—It is just now worth any one's while to pay a visit to the Holly and Mistletoe growing parts of Old Sherwood Forest. So rich and grand is the display of red berries on the one hand, and pearl berries on the other, that old foresters say they never saw the luxuriance excelled. The past year has been most favourable for the growth of both Holly and Mistletoe, but especially for the latter. Some of the Hawthorn bushes fairly bend with the weight of their excessive growth of the parasite.

Menziesia polifolia alba.—Where there is a demand for flowers during autumn and winter, this should be grown extensively. Plants in large beds of it in Messrs. Rollisson's nursery, which were in full bloom all summer and autumn, have just made new growth, and will produce abundance of white blossoms, which are admirably adapted for making into small bouquets all through the winter.—S.

Trees in Washington.—The trees most largely planted are named in the order in which they are valued by the Commission. First is the Silver or White Maple (Acer dasycarpum), then American Linden (Tilia americana), American Elm (Ulmus americana), Scarlet Maple (Acer rubrum), Box Elder (Negundo aceroides), Sugar Maple (Acer saccharinum), American White Ash (Fraxinus americana), English Sycamore (Acer Pseudo-Platanus), Button Ball (Platanus occidentalis), Tulip Tree (Liriodendron Tulipifera), Honey Locust (Gleditschia triacanthos), and Norway Maple (Acer platanoides). These, and some twenty other kinds in smaller numbers, are set from 20 ft. to 25 ft. apart, and there are miles and miles of streets in which not a dead tree, or one diseased, can be seen, showing that the planting must have been done in the best possible manner.—P. Henderson.

WINTER PROTECTION.

This important and oft-explained precaution, that demands attention yearly, may seem to the more experienced too trite to afford much interest even at this season of the year. But it should be remembered that all are not experts, and that, with all due respect to superior knowledge, even experts may catch a slight suggestion of value from the recorded experience and methods of others. We apprehend, however, that the principles on which secure protection is based remain much the same everywhere—the only variation consisting in certain changes of methods that adapt them to any peculiar circumstances. The following remarks will suffice to indicate the processes that have with us proved most successful:

The Proper Season for Applying Winter Protection.—A strong temptation to cover up plants for winter presents itself to the inexperienced during the first cold snaps of November. The ground is firmly frozen, and now it seems natural to suppose the time for winter covering has arrived. But there never was a greater mistake. Such early spells of cold usually last but a short time, and may be succeeded by much warm weather, thus exciting the sap of the plant under cover, and thereby exposing it to injury from a succeeding heavy frost. The hardening off process is as necessary to the plant in the open ground, as under a proper system of greenhouse culture. Several really cold periods in early winter, brought to bear on the uncovered plant, serve to prepare and adapt it for the endurance of subsequent hardships. Little injury, moreover, occurs from cold in December to any tolerably hardy plant. It is the proper season of rest, and the diminished power of the sun works the less damage, because dawn and midday present no such violent contrasts of temperature as are wont to appear in early spring. A large majority of all plants that die from the effects of cold, die, therefore, in March and April, and hence the danger of removing covering too early in spring. Give, then, such plants as you wish to remain out all winter, a good freezing, and protect with judgment any time from the first to the middle of December.

Injurious Methods of Protection.—It is not uncommon to hear people claiming credit for extra care given to their plants in winter because they have covered them with a barrel, or some other close protection. Nothing is really more injurious. The air, being confined, becomes colder, and concentrates its effects on the plant until one might term it a case of smoothering with cold, if such an expression were admissible. All hardy, or even half-hardy vegetation requires, during winter, some of the influences that come with the free action of the outer air, which also serve to temper, at the same time, the otherwise concentrated cold. Not only is such close protection unsafe, but we should seek the thinnest, lightest covering that will shelter from sun and sleet. All heaping of hay, earth, &c., too high about the plant is to be avoided, and especially should care be taken to leave untouched with the knife any growth of plants, like Roses, which require sharp pruning to develop flower-bearing wood. Such excision only makes an entrance for cold and rain, to the consequent rotting or freezing of the heart of the plant. The pruning can be safely performed in spring.

The Safest Method of Protection.—Heap a moderate amount of earth about the plant from one to six inches deep, according to its size and nature. Cover this with a light mulching of leaves or hay, and then apply a sort of hood over the top by means of evergreen boughs stuck in round about, and left sufficiently open to allow a free play of air without too much exposure to sleet and sun. Should evergreen boughs be scarce, a convenient hood may be constructed by tying the ends of a bunch of straw together, and then hanging it over a stick somewhat taller than the plant and inserted in the ground alongside it. This may be so adjusted as to protect sufficiently the foliage of the plant, which is all we need desire. Such simple methods of protection are available for every one, and were their employment more general, we should hear less of winter-killed Rhododendrons and other evergreens, planted perchance where we could hardly expect a Norway Spruce to pass unscathed. Fate seems to ordain that a beautiful and choice plant, slightly delicate in winter, must be the very one to take the most exposed and unsuitable position. Wherever this is necessary, however, a judicious system of winter protection at least should be followed.—S. Parsons, in "Moore's Rural."

Tritoma grandis in Ireland.—This charming winter flowering plant is now in great beauty here and promises to continue so for some two months yet to come. It will of course require some protection during frosty nights, which is easily effected by means of Spruce branches and mats. In most gardens they will, I imagine, have done blooming, and I attribute the flowering so late of this plant here to its being transplanted in April; for I find that transplanting has a wonderful effect in retarding the blooming period of this and of T. Uvaria. I had to move some of these last April, but one clump of T. Uvaria remained undisturbed; this flowered at the usual time, but the transplanted ones did not show a single spike until the plants in the clumps in question had done flowering, thus prolonging the blooming period to twice its usual length. After T. Uvaria was over, T. grandis began to push up its spikes, which were not altogether over before the transplanted ones followed in succcssion, thus giving us Tritomas six or seven months instead of as many weeks.—Thos. Spelman, *Derry Castle.*

Plants in Bloom in Anglesey.—I have sent you a few specimens of flowers now in bloom here* in the open air; I could have added a Gloire de Dijon Rose, but that I want to save them for Christmas. I have seen several inquiries in The Garden as to getting the Anemone to bloom early. This year and last year mine were in bloom from the end of September until the middle of May; they are a mass of bud now. I simply put them in the ground and never lifted them, and never protected them in any way. The Gazania stood out in the open ground unprotected last winter, and the blooms sent are from these plants; the Mignonette the same; the Lobelia gracilis is as full of leaf and blossom as if it were midsummer; the Globe Artichokes are in full foliage in the kitchen garden, and have plenty of young heads on them. About a week or ten days ago we had a slight frost in the afternoon, which changed during the night to rather high wind and rain. The next day, to my surprise, every Holly, of which I have a great number, shed most of its leaves, though not in the least discoloured. No other evergreen was affected, and I never noticed a similar instance before; the berries also fell.—W. L. Banks.

Peristrophe angustifolia aurea variegata.—This is a graceful fine-foliaged plant with a dense-spreading habit. Its leaves, which are ovate-lanceolate in shape, are golden-yellow in the centre, margined with dark green. It succeeds either in a stove or greenhouse, but it is much improved both in colour and habit by keeping it in a stove. It is readily propagated by means of cuttings placed in a slight bottom heat. As regards soil, it likes a light loam, mixed with a little leaf-mould and sand. When the pots get well filled with roots it enjoys copious supplies of weak liquid manure. It flowers freely if allowed to do so, producing blooms of a lilac-purple colour, very much resembling those of the old Justicia speciosa. What is worth knowing is that it is never attacked by insects of any kind. From its habit of growth I should think it ought to make a pretty basket plant, where such is desired, as its branches hang down most gracefully over the side of the pots, almost concealing them from view. In order to have a good pot specimen of it, it requires a little training, and only a little. I place a neat stake for the centre shoot, and six or seven at equal distances apart round the edge of the pot, inclining their tops outwards; to each of these I tie a shoot and pinch them back to 8 in. When side shoots are produced from the axil of every leaf, these I allow to grow at their own free will. A plant of it in the stove here in a 7-in. pot is 2½ ft. through, and nearly as much in height. It is associated with Ferns, amongst which it has a delightful effect.—T. Spelman, *Derry Castle.*

Old Hardy Plants.—Can any one tell me where to procure Ranunculus pyreneas fl.-pl., R. gramineus fl.-pl., Parnassia palustris fl.-pl., or the double white Primula pyrenaica mentioned by Parkinson?—W. E.

Eryngium Serra.—This highly ornamental Sea Holly is perfectly hardy, and if planted out in spring in rich sandy soil, will, by the following autumn, attain large dimensions. Its spreading Agave-like leaves, which are produced close to the ground, render it one of the best of green-leaved subjects for planting on raised positions in any part of the garden or pleasure grounds.—S.

Helleborus angustifolius.—This is one of the best of Christmas Roses. Its flowers, which are produced several weeks earlier than those of H. niger, are of the purest white, large, and of good substance. In bouquets they are much more effective than those of the ordinary Christmas Rose, which usually have greenish tinted petals. On a bed of it in Mr. Parker's Nursery, at Tooting, the blossoms are just beginning to expand.—S.

Imported Lilies.—I see that "Dunedin," in his article on Lilies (see p. 557), refers to an importer, who advertises in your paper, and rather leads people to believe that they cannot reckon on imported Lilies flowering the first season. In fairness to the person alluded to, I must say that last year I bought 100 bulbs of him at 1s. each; I planted them here and there in Rhododendron and other beds, and, so far as I know, not one failed to flower, and some produced as many as seven blooms—in my opinion a very satisfactory result.—Stewart Hardy.

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* Hydrangea, Fuchsia, Primroses, Virginian Stock, Nasturtiums, Double Feverfew, Snapdragon, Saponaria, Omphalodes.

THE INDOOR GARDEN.

ORCHIDS FOR WINTER BLOOMING.

Orchids now opening their blossoms, or showing signs of soon doing so, will require some attention, otherwise there will be a great display at one particular time, and none afterwards. To avoid this, a little skilful management is required; for instance, while we may expect a considerable amount of gaiety to be maintained for some time by the plants which we have enumerated during the past few weeks, we must look ahead, and endeavour to so regulate the supply as to have a succession. The flowers of both Dendrobium Wardianum and D. crassinode are on the point of expanding, and as they are comparatively short-lived, a few plants of each species should be removed to a cool house, and kept comparatively dry, by which means their progress will be retarded for a long time. I may remark, in passing, that the original form of this plant is a much later bloomer than the more robust growing kind which has, during the last year or two, been introduced in considerable quantities. The same remarks as to retarding will also apply to that old, but universal favourite, D. nobile, some of the flowers of which are opening now, but we do not want them all at once. D. japonicum does not find much favour with the higher class of Orchid growers but it is really a desirable species where choice and delicate flowers are required for cutting. It is a dwarf, free-growing plant, which bears cutting well, and it is seldom quite without flowers at any time of the year. It varies in colour from pure white to deep rose, and is admirably adapted for bouquet-making. The genus Bletia is not a fashionable one, but one species, B. Shepherdi, produces, during the winter months, finely-branched panicles of rich purple flowers, which last a long time. It therefore deserves a place in every collection. There are several other fine varieties of Bletia, but as they bloom later in the season I shall not now further allude to any of them.

A Study of Foliage.

Having said something about retarding Orchids, I must next week add a few words on forcing them. This is a somewhat vexed question; nevertheless, I have seen Orchids forced in many instances, and with good results.

W. H. G.

CHINESE PRIMULAS AT BIRMINGHAM.

A recent visit to Birmingham afforded a favourable opportunity to inspect the Chinese Primroses grown by a well known cultivator — Mr. Tomkins, of Sparkhill, a suburb of that town. Mr. Tomkins raised and sent out, a few years ago, two very fine kinds, named respectively Princess Louise and the Marquis of Lorne, the first a fine white, and the latter a good deep coloured purple; and it was not improbable that with such seed parents some further fine kinds might have been produced. In one respect, my visit was too early, as the great mass of plants were yearlings, and would not be in full bloom before the middle of March; these, however, were chiefly the stock of the two above named kinds, and as, of all the best sorts in Mr. Tomkins' hands, some few very fine old plants were in flower, it was possible to see each variety in its very best form, as it is an acknowledged fact that Primula plants of the second year invariably produce the finest flowers. At Sparkhill, Primulas are grown in broad, light, airy, span-roof houses, but rather too high; and to this defect is to some extent attributable the fact that the plants generally are more drawn than would be the case if kept near the glass. The difference in the seedling plants which I recently saw at Messrs. Suttons' Reading Nursery and those at Sparkhill was most marked, and the same might have been said of the young double sorts as compared with those which I saw a few years since in the span-roofed houses at Messrs. Henderson's nursery at St. John's Wood. Probably the dense smoky atmosphere of Birmingham has something to do with the matter, and it is but fair to Mr. Tomkins' grower to say that in all other respects his young Primulas were worthy of commendation. The cream of the collection just referred to was about a score of very fine plants of single kinds growing in 6-in. pots, all of the second year's growth, and nearly all in fine flower; these were elevated on inverted pots, and thus brought nearer the light, and the benefit was apparent in the robust, yet generally compact, habit of growth, especially in those of the Princess Louise variety, which has, in a marked degree, the sturdy and compact habit so peculiar to any good strain of white-flowered kinds. There were also numbers of fine double sorts, mostly in good bloom, and although not such large plants as those shown by Mr. Gilbert, they were perhaps more compact in growth, and the best kinds produced flowers of fine quality. Of these Mr. Tomkins has raised some good kinds, his alba magnifica (white shaded rose) having received a first-class certificate at South Kensington. Some of the best also were from Messrs. Henderson's fine collection; but, except that they were some of the best-grown large plants of the double kinds I have seen, I much doubt whether any of the more recently raised double kinds excel those raised by several growers in the neighbourhood of Southampton some ten or twelve years ago. Unless sent from a distance, it is, however, a remarkable fact that we never see such fine examples of the culture of the double Primula shown in London, and it is but fair to conclude that just now the best plants of these are to be found at Sparkhill and at Burghley. Like Mr. Gilbert, Mr. Tomkins gives his large plants generous cultivation; this is the secret of the fine robust foliage and fine flowers which some of them produce. A mixture of sweet fibrous loam and well-rotted cow-manure, with a sprinkling of crushed charcoal, makes a good compost for Chinese Primulas, and Mr. Gilbert bears testimony to the value of a good drainage, consisting of pieces of charcoal, as not only keeping the soil free of superfluous moisture, but also as tending to sweeten and purify it. Of large single-flowered plants then in bloom, I found specimens of the two kinds named; also the rich carmine-coloured variety on both the plain and Fern-foliaged sorts, a few having salmon-tinted flowers and Fern foliage, and the purples also on both forms of foliage. The Princess Louise kind has flowers of good substance; they are also very large and massive, and are produced in large heads. The colour is white, shading off to rose as the flowers age. The Marquis of Lorne has the usual dark foliage associated with purple flowers, and it is of the habit generally found in all dark-coloured strains. The flowers are large, of good substance, and of good colour, the shading being deepened towards the edges of the petals, and increasing with age. This kind does not excel the good purple strains, with which we have long been familiar, except in a trifle more substance of petal; but the edges of the flowers are less fimbriated. The carmine kinds are identical with what Mr. Bull has sent out under the name of the Florence, and are also precisely similar to what has long been grown as splendens grandiflora, a rich rosy-carmine. With this strain I have long been familiar, as it was common in the south ten years since, and is found plentiful there now. In saying this I do not wish for a moment to detract from the merits of the plants seen at Birmingham, but it would be absurd to assert that these constitute a strain peculiar to that part of the country. If any one doubts this, it is but necessary to refer to some of the drawings made of flowers ten years ago, by which it will be seen that in the way of obtaining varieties of the single Primula we have rather retrogaded than progressed. The salmon kind is as well known as the carmine, and is one of the most pleasing forms of all; the foliage of this kind, whether Fern or plain, is at all times of a pale green hue, and, without doubt, it sported originally from the white variety. The beautifully flaked forms were not found at Sparkhill, neither were the lavender-tinted kinds, except in a semi-double state. Perhaps the best single kinds ever found in the hands of any firm were those grown a few years ago by Messrs. Windebank & Kingsbury, of Southampton, who had some fourteen to sixteen kinds all distinct. Mr. Tomkins' chief novelty is a single plant of a two-year-old seedling from the Princess Louise, on which there are two trusses bearing already several expanded blooms; these are of the same hue of colour as the parent, but of very large size for a Primula, and the petals are so full that the edges, instead of overlapping, seem to force each other up, and the flower is so crumpled that it presents quite a semi-double form. To those who would judge the merits of a flower by its evenness, flatness, and precision of shape, this would of course be a great defect; but, fortunately, stern florists' rules are not enforced in the case of the Chinese Primrose, and the peculiar form displayed in Mr. Tomkins' seedling plant will add materially to its popularity. The foliage of this plant is of a very robust but compact Fern kind. Carefully crossed in a high temperature with other colours, no doubt this plant might be induced to yield some beautiful and novel kinds. One of the most striking novelties in the Chinese Primula which I have seen is now in the hands of the Messrs. Suttons', at Reading. It is a break from the white variety, the result being a strain having dark foliage and flowers of a deep, rich rosy-purple hue, that deepen with age, yet retain that close, compact habit, so peculiar to their white variety. This will prove to be a valuable addition to this family of winter-blooming plants. To be successful in seeding the Chinese Primula great care is required at this time of the year; it is useless to attempt fertilisation with the brush except at a temperature of from 50° to 60°, as the pollen must be dry to be fertile; damp is also a most destructive enemy to the flowers. A. D.

Dwarf Poinsettias.—We have here a number of old Poinsettias which were liberally treated in order to induce them to push strong shoots, and in the end of August the tops of these were taken off, potted in 3-in. pots, and plunged in bottom heat. By this method we get dwarf plants with heads of bracts double the size of those obtained in the ordinary way. About a fortnight after the tops were taken off, the old plant pushed a somewhat deformed shoot that made slow progress for a few weeks, but afterwards it grew freely, and at the present time it has three heads of bracts on it of medium size. The new Poinsettia plenissima is a valuable addition to the above, not only because it was a greater number of bracts of better colour but because it keeps in good condition till February. We had one last year that kept well even till March.—T. Coats, *Pains Hill, Cobham.*

An Indoor Town Garden.—I called the other day at Messrs. Pounce & Son's establishment, 18, Westbourne Grove, where I was much pleased with some beautiful Fern cases, baskets, and vases, all tastefully arranged in an upstairs room devoted to a special show for the season. The room is, indeed, literally a floral bouquet, but the best thing which I saw was a side window fitted up as a case; at the bottom is a tank, in which water plants seem to be perfectly at home; there is rockwork up the sides clothed with Ficus repens and Ferns hung in rustic baskets. What is chiefly conspicuous is the elegance of arrangement, and the proof afforded by it that if towns-people chose they might, without much trouble, enjoy some of the beauties of the floral world at all seasons—not, as is too often the case, badly arranged on ugly wire stands, but placed in natural-looking cases, vases, and baskets, that assist rather than mar Nature. —J. Croucher.

Improving Ageratums.—A few years ago it occurred to me that the Ageratum possessed many qualities, which, if properly developed, would bring it to the front as a bedding plant; evidently it had not had that attention bestowed on its improvement which its merits deserved; I resolved to try what could be done with it. After procuring a few packages of the best seed I could get, I sowed it, and raised a large number of seedlings, which were very disappointing, scarcely one was worth keeping; very late in the season I discovered one which was a decided improvement, and which was afterwards named Countess of Stair, and was sent out a few years ago by Mr. Williams, of Holloway. The principal step in advance made by this batch of seedlings was variety of colour; seed was saved from the best varieties, taking into account colour, habit, and constitution. For a number of years the same process has been going on, and the result is highly satisfactory; we have now got almost every shade of blue, not a few approaching pure white, others white with red buds, the flowers tipped with pink and other shades of red, some flesh-coloured; a scarlet is within the range of probability. We have now a few varieties possessing all the requisites of first-class bedding plants—abundant flowers, striking colours, strong constitutions, compact and moderately dwarf habit, and as easily kept over the winter as Pelargoniums. We test the best varieties by growing them in beds and lines. Those which attracted most attention last session were—Lady Jane (sent out by Mr. Williams last spring), colour blue, 12 in. to 16 in. in height, abundant flowerer and free grower, with fine constitution; Beauty, fine dwarf, nearly white variety, a pretty distinct bedder, from 8 in. to 10 in. in height, comes early into flower, has a strong constitution, and is easily wintered; Cupid, the finest of all the dwarf blues, very fine bedder, compact habit, from 6 in. to 8 in. in height, comes early into flower, strong constitution, and consequently easily wintered.—A. Fowler, in "Gardener's Chronicle."

The extent to which floral decoration is carried on among the wealthier classes in America may be inferred from the following extract, descriptive of a recent marriage in the Vanderbilt family. The marriage-bell hung in front of the Fifth-ave window of the parlour. Its rim was within 6 feet of the floor, and it was 4 feet in diameter. The lining was all of white flowers, and the same kind of flowers on the exterior were varied on three sides by clusters of Pansies, masses of Roses, and Victor Hugo Carnations. On the front of the bell, the monogram, composed of the letters T and V, was arranged in block letters, the T being of Violets, and the V of maroon Carnations. The clapper was a closely packed pendant of scarlet Bouvardia.

VALLISNERIA SPIRALIS.

This interesting aquatic plant grows abundantly in running streams in the south of Europe. It is a perennial, producing from a very short stem numerous pale-green, Grass-like leaves, about $\frac{1}{4}$ in. in breadth, and from $1\frac{1}{2}$ ft. to 2 ft. in length. The flowers of the two sexes, which are borne on different plants, are totally distinct from one another. Those of the female have a cylindrical ovary, bearing at the top three small, spreading calyx lobes, enclosing three stamens and three stigmas, the whole being confined in a tubular spathe. Each flower is borne at the end of a very slender, spirally-twisted stalk, which uncoils in proportion to the depth of the water, so as to let the flower float on the surface. The male flowers are very minute, white, and globular, seated upon a short stalk just emerging from the base of the plant. When matured, they separate from the stalk, and rise with their own buoyancy to the surface, where they float about, allowing their pollen to escape, and fertilising any female flowers with which they come in contact. After fertilisation has taken place, the stem coils up, drawing the flower to the bottom of the water, where it perfects its seeds. The leaves of this plant are very beautiful when seen under the microscope, and so transparent as to allow the observer to watch the movements of the fluids contained in the cellular tissue. It can be grown in any vessel containing from 9 in. to 12 in. of water, either in the drawing-room or conservatory, taking care to keep the water clean, and as far as possible of a uniform temperature. Sandy loam suits it best, either potted and then plunged in the water, or planting at the bottom of the vessel. If in pots, they may be surrounded and hidden from view by pieces of ornamental stone; and I would recommend this mode of culture in preference to planting in the vessel, as the pots can be easily removed and cleaned when necessary. A. P.

Vallisneria spiralis.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Chamædorea glaucifolia.—This is one of the most graceful of Palms, having long Grass-like leaflets. Well-grown plants of it in 6-in. pots are admirably adapted for room decoration. It grows rather tall, but in other respects it would make an excellent market Palm.—C.

Luculia gratissima.—A number of plants of this in full flower are making a fine display just now in Mr. Williams' nursery at Holloway. This glorious shrub would doubtless be oftener met with than it is were its culture better understood. It is generally thought to require a stove; but an intermediate house suits it best.—S.

Abutilon rosæflorum.—For market purposes this rosy-flowered Abutilon will, no doubt, ere long be largely grown. Its dwarf, branching habit renders it suitable for culture in small pots, and the profusion of flowers which it produces for months in succession, would make it saleable for a much longer period than that allotted to most plants.—Q.

Lapagerias in a Cold Pit.—A well-established plant of Lapageria rosea, trained along the back wall of a brick pit in Mr. Parker's nursery at Tooting, has lately been flowering profusely, and, to all appearance, will continue to do so for some time yet to come. The pit, which is not heated in any way, is used for hardy Ferns. Any one, therefore, having a small unheated house, may grow a plant or two of this valuable climber. At Gunnersbury, trained outside, it flowers freely every year, but its roots are inside.—R.

THE FLOWER GARDEN.

THE WILD PLANTS OF NEW ENGLAND.

I do not know that it will be especially interesting to your readers if I give you some account of a few of the wild plants which grow in limited localities in Massachusetts. But, residing for a short time on the sea-shore in the southern part of our State, near Buzzaid Bay, I have thought that a brief notice of the plants met with might be useful to all lovers of the wild garden, of which you are so zealous an advocate. To me occasional visits here have been specially attractive and pleasing, as well as instructive, giving me an opportunity to renew my acquaintance with the flowers of my boyhood, when I tramped miles—through wood and field, and pasture and swamp—in search of plants which I find all here in the small space of a few acres. The grounds are situated on a cove opening into the bay, and extend a quarter of a mile or more along the shore, running back about the same distance to the town road. On the front and sides of the house, which stands some 200 ft. from the shore, the land has all been cleared, and is an open lawn to the old walls on either side; but to the rear of the house, a few rods distant, as far as the town road, are about 20 acres of woods and bushes. The avenue to the house, which is about a quarter of a mile long, leads through these bushes and trees, so thick and dense as almost to exclude the sunlight, and it is only wide enough for a single carriage, the branches and foliage forming a dense thicket up to the carriage ruts. No knife or saw, or scythe or sickle touches either trees or Grass; only when too close the former are lopped off, to allow a passage through them. As you emerge from this, through the old inner gate, whose posts are thickly studded with Moss, to the open lawn, the view is delightful, with the cove closed in by projecting woodlands on each side, the open bay beyond, the opposite shore six miles off, covered with a dense growth of wood, and the broad sea in the distance. Here no steam engines, with shrieks and puffing, no saw mills or manufactories, with their noisy machinery, disturb the quiet of the place; no tall chimnies discharge volumes of smoke; no rows of brick warehouses mar the beauty of this delightful shore. On the contrary, the village—with its hotel and church spires, three miles distant—is just seen over the hill on the west, and the lighthouse a little farther off on the east. In the distance, fifteen miles away, lie Oak Bluffs, the fashionable resort of those who love show and noise, and headaches and heartaches, instead of the quiet pleasures of the peaceful seashore. My first visit here was towards the end of July. As I left the railroad station, situated almost in the woods, with only a few scattered houses, half a mile from the village, and turned into the old road leading along the shore, a very few rods brought me to the thicker woods which border the road for four miles. Here the first object which attracted my attention was the Lilium pennsylvanicum, which grows all along the roadside up to the very carriage-track; but a little distance further I saw the tall stem of Lilium superbum towering up above the underwood, loaded with buds, and a fortnight later one blaze of flowers, some of the stems of bulbs which I dug up measuring 7 ft. high. Jogging slowly along, to study the vegetation, the next plant was that most beautiful of all American herbaceous plants, the well-named "Butterfly Weed," Asclepias tuberosa, in clumps many years old, for I cut flowers from the same plants six years ago, which were covered with hundreds of umbels of real orange-coloured flowers—a sight never to be forgotten. We now come to a little creek, which runs into the bay, and catch a glimpse of the village and bay, but soon enter the forest road to find it bordered on either side with Clethra alnifolia, just beginning to open its buds, but later one mass of erect spikes of blossoms, filling the whole air with their fragrance. For full half a mile we rode through this mass of Clethra, relieved by dense clumps of Prinos glaber, with its glossy, Myrtle-like, evergreen foliage, actually glistening in the sunlight. The common Milk Weed (Asclepias syriaca), with stems 4 ft. high, displayed quantities of its globular heads of bloom. Leisurely toiling up one of the low sandhills, nothing could be prettier than the little Cassia (C. chamæcrista), with its tiny stems wreathed with yellow flowers, and its Mimosa-like foliage, bordering the roadway. The scene soon changed again, and we entered a dense wood, composed mostly of White Pines, where nothing but massive Ferns and great Fungi of all colours checked the roadside path. Further on we passed through a low, swampy spot, on one side of which is a Cranberry bog, artificially made, but for some reason neglected, and it was then, and is to-day, one garden of wild flowers, which I need not name here, unless it be the pretty Arethusa bulbosa, with its bright "crystalline purple" blossoms. Again slowly winding up another small sandhill, of which there are only two on the road, the Vacciniums, with the berries just beginning to colour, clothed the scanty soil, and here and there the Viburnums, some with red, and some with bright blue berries, formed massive shrubs against the old stone walls, the branches bending under their weight. The whole road of three miles is a wild garden of rare beauty. The larger ponds are covered with the snowy flowers of our fragrant Lily (Nymphæa ordorata), and the shallower ones and ditches are filled with Pontederia, covered with spikes of blue flowers. The trees which abound are the white and pitch Pines and Juniperus virginiana; the yellow, white, and red Oaks; the scarlet Maple, already beginning to don its autumn livery of blazing colours; Birches, Poplar, Ilex opaca, Sassafras, and that beautiful tree the Tupelo (Nyssa biflora), quite green with its glossy Camellia-like foliage, but now changing to its scarlet-crimson hue like a garnet among emeralds, dazzling in its brightness. But we now turned into the avenue and were soon lost in the thicket, coming upon the lawn to find a plant which had just opened its first bloom, and worthy of prominent notice, not only for its beauty, but for the contrast between the sombre avenue, the sparkling water of the bay, and the deep verdure of the grass as it glistened with the dew. This was a clump of Hibiscus palustris—at home—its huge lovely rose-coloured flowers—unlike all else that grow here—and looking like some hot-house, or tame plant, set down there in anticipation of some admiring visitor. I must not omit, too, a notice of another plant truly named by somebody who had an appreciation of the beautiful—this is the Meadow Beauty, Rhexia virginica. In every little bit of land it grows in profusion, sometimes in a few scattered roots, but usually in clumps 4 ft. or more in diameter, forming a dense mass of flowers of the brightest pinky-purple, set off by the very prominent golden stamens. Next to Asclepias tuberosa there is no plant which is so strikingly attractive. I have had brilliant beds of Phlox Drummondi, but when I state that this fully equals, if it does not surpass it, some idea of this beautiful plant may be formed. The coloured plate in The Garden did not do justice to it; in fact, its peculiar bright tint is a difficult task for the painter to imitate. I have not, of course, enumerated one tenth of the plants and shrubs on the road, but having got into the house, after a quiet rest, I will again take up the subject. C. M. Hovey.

EVENING PRIMROSES.

These are amongst the most showy and healthy of late summer blooming plants, and surely about the easiest grown. I admit that from June onwards they are in their glory, but many species and varieties in late summer, from increased growth, of necessity become more glorious. Amongst them we have tall-growing sorts like Œnothera Lamarckiana and fragrans, and decumbent carpets, as in trichocalyx and cæspitosa; white flowers as in the last-named two, coronopifolia and speciosa, often changing with age to pink or rose; and few plants have more brilliant yellow blooms than those of missouriensis and Lamarckiana, besides they are so big—4 in. to 6 in. across. Nearly all are more or less fragrant, fragrans, cæspitosa, marginata, and eximia, being particularly odoriferous. As a truly hardy and neat perennial, fruticosa var. linearis is one of the best, its little bright yellow flowers being profusely borne all summer, but most lavishly in June and July. All are not equally fond of the night as their name might suggest, for many species are open by day, as, for instance, Œ. linearis, speciosa, taraxacifolia, and trichocalyx. Many of our finest evening Primroses are natives of west of the Mississippi States, as California, Utah, Missouri, and Texas, and, consequently, several are not quite hardy here. It is advisable to winter the more tender sorts—biennials or perennials—in frames, and where practicable, save seeds and raise seedlings annually. So far as I am acquainted they all bloom the first season from early seedlings. Some of the true perennials, and particularly the prostrate-growing ones, are shy seeding in our garden, but the tall growers seed freely. Missouriensis, linearis, fragrans, Lamarckiana, and biennis withstood last winter (40° below zero) unprotected in the open garden, unscathed; cæspitosa survived under some leaves on a wooden shutter, but alongside of it trichocalyx perished.—Wm. Falconer, in "Gardeners' Monthly."

Outdoor Plants in Bloom.—Although we have slight frosts every morning, the following plants are in bloom here in the open ground:—Helleborus niger, Veronicas, Pelargoniums, Fuchsias, Mignonette, Tea and China Roses, Madame Falcot Rose, Pyrethrums, Canterbury Bells, Tritomas, Schizostylis, Wallflowers, Lælia speciosa, Polyanthus Narcissus, Violets, Primroses, Alpine Auriculas, Polyanthuses, Pansies, and Chrysanthemums. I cut the other day several bunches of bloom off Habrothamnus elegans on a south wall, where it has bloomed beautifully throughout the summer. It is planted against the wall of a house, where it has stood two winters, coal ashes being put over the roots to protect them from frost.—W. Divers, *Wierton, Maidstone.*

TREES AND SHRUBS.

RETINOSPORA ERICOIDES A MISNOMER.

At page 558 Mr. Meehan asks—"Is not Mr. Syme mistaken when he charges M. Carrière with saying this is a native of Japan?" If I were to answer *no*, I should not be far wrong, as Mr. Meehan may see by referring to page 141 of the first edition of M. Carrière's book on Conifers. But the truth is, I never to my knowledge, not even in the article criticised, charged M. Carrière with saying any such thing. I never even mentioned R. ericoides. What I then wrote about was R. juniperoides (R. decussata, &c.), and even with the beautiful engraving of a twig of the same before him, Mr. Meehan has, unbidden by me, jumped to the conclusion that it was the same as the mongrel-looking plant that was raised some years ago in the Messrs. Ellwanger and Barry's Nursery, and now very well known as Thuja ericoides, Thuja Ellwangeriana, and Retinospora Ellwangeriana, &c. In branches which Mr. Meehan has of the American seedling, the "upper portion is the normal Thuja occidentalis; the lower, Retinospora juniperoides." I, on the contrary, submit that the upper portion is the normal T. occidentalis; the lower, T. occidentalis in its juvenile state. Am I to believe that Mr. Meehan is unacquainted with the fact that in the earliest stage of their existence all the individuals of T. occidentalis, and, indeed, all the Cupressinæ, present the juvenile feature of leafage of this American seedling, and that they are all more or less alike? This much I infer when he takes my description and the illustration of R. juniperoides at page 404 to be intended for what in this paper I have called the American seedling. I begin to think that R. juniperoides may not have reached America yet; and I shall have great pleasure in sending to The Garden office a small twig to be forwarded to Mr. Meehan. Truly, "it seems strange to us over here that our friends in America should be so mystified over these things, which are old to us in England." I have never described Ellwanger and Barry's famous seedling, but when I do, Mr. Meehan may rest assured that I shall not require to consult the "Proceedings of the Chicago Meeting of the American Association for the Advancement of Science," or any other popular "proceedings" or books on Coniferæ, to find a proper name for it. With the plant and other related forms before me, I shall have little difficulty in raising it out of its present popular synonomy to its proper generic position. I do not profess to guage the exact knowledge of my intelligent countrymen respecting "the biological law which induces the dimorphism" in the plant under consideration, and other Cupressinæ; but, as a humble tyro in this branch of botany, I have to confess that I am only now endeavouring to master the rudiments, if I may so speak, of this profound yet wayward law; and should be so grateful to any "intelligent" American for a comprehensive exposition of its workings in the case of the dimorphism of the American seedling and kindred Conifers, believing, as I do, that the intelligent handling of such a law may be made to at once account for the dimorphism in the individual under consideration, the polymorphism presented by the individuals of a species, and the polymorphism perhaps of all vegetable organisms. George Syme.

IVY-CLAD TREES.

In verdure trails the Ivy shoot,

. . . . .

O'er bole and branch, with leaves that shine
All glossy bright, tenacious twine,
And the else naked woodland scene
Clothes with a raiment fresh and green.
Fair is that Ivy twine to see!

The common Ivy of our woods has been a general favourite for ages past; and, although so many new and beautiful varieties have been raised, it still has its admirers, and there are few who cannot associate the Ivy with some pleasing remembrance in days gone by. It is, perhaps, never more beautiful than when seen clinging and climbing over some old ruin, whether it be the remnant of an abbey, castle, church, cottage, or pollard tree; and, if it can be said to lend a greater charm to one more than another, I give the preference to the latter. The furrowed bark on the decayed trunk of some old, picturesque tree, covered with the delicately and beautifully-veined, angular-lobed leaves, gives life and richness to the scenery, even in the depth of winter; but it may be mentioned that Ivy, when not creeping or adhering to an object, loses the veins and lobes of its leaves, and becomes entire margined, and deep green. The annexed woodcut represents the stem of a tree densely clothed with Ivy, and its verdant festoons, hanging carelessly, but gracefully, in mid air, or linked from bough to bough, are pleasing features in woodland scenery. Ivy is scarcely so attractive in spring and summer as in autumn and winter; when the foliage of trees has assumed its brown and varied rich autumnal tints, the deep green leaves of this evergreen creeper present a pleasing effect; or, when the ground is covered with snow in winter, an Ivy-clad tree, amid its polished, lively green furniture, forms perhaps one of the most cheerful pictures to be found in woodlands. On almost every estate, however small, there are some few trees—old trees that are of no value save for ornament, and that have matured their growth—that may be given up to Ivy by those who appreciate and admire its picturesque charms. It may also be allowed unlimited freedom on any inferior undergrowing trees that have been overtopped by better ones, of which there are generally too many on nearly every property, particularly where judicious thinning has been neglected until too late to be of any benefit. In natural copses, when not grown for profit, Ivy forms an ornamental feature, especially on the Birch, the bright green of the former contrasting charmingly with the white bark and brown airy twigs of the latter. Ornamental Fir clumps, too, with the stems of two or three of the most inferior trees clad in Ivy, become thereby much improved in appearance; but the Ivy rarely creeps amongst the branches of the Fir; when it has reached the foliage, the dense shade repels its further advance, and it then seems to retrace its steps, so to speak, and forms pendent festoons, as it develops lateral growths, down the stem to the base. I need scarcely add that Ivy will grow in almost any soil or aspect; it, however, prefers a dry, well-drained subsoil. There is no reason why every park, pleasure ground, wilderness, or ornamental island should not have, at least, a few Ivy-clad trees. The wild garden and rockery, too, can hardly be said to be complete without a few Ivy-covered objects. Lovers of creeper-clad trees should, however, take care not to allow young-growing trees, or any fine, healthy, ornamental timber to be taken possession of by Ivy, for, as Shakespeare (a little altered) asserts—

The Ivy that hides the princely trunk,
Sucks the verdure out on 't.

Ivy-clad tree trunk.

Whether Ivy draws nourishment from the juices or sap of a tree, as Shakespeare infers, I am not prepared to say; but I am rather inclined to believe that it receives sustenance from its own roots, which no doubt impoverish the ground in which the tree is growing. It is, however, an indisputable fact that when Ivy is allowed to take possession of growing young trees, and particularly those with smooth bark and soft-wood, it tends to check the flow of sap, and prevents the proper development and expansion of the stem; its tightly-laced and interwoven mass of dense plaits also excludes light, air, and moisture, which are so beneficial to tree life. The production of foliage, too, gradually diminishes; and when Ivy has established itself on young trees, covering them from stem to branch, and from branch to twig, the result is often slow but premature death. George Berry.

Longleat.

The Weeping Deciduous Cypress.—The attractions and many valuable qualities of the ordinary American Cypress have been long known; it is employed in ordinary plantations, and to those who have seen it in southern swamps, memories of knobbed and gnarled roots protruding above the earth or water, and grand, great trunks, will readily appear. Its place in the landscape gardener's work is either singly or in masses, along the shores of lakes or streams, and in valleys or low spots. High, dry situations do not so well accord with its nature, and the meagre growth caused by the employment of such positions often give rise to a dislike that its many excellent qualities render quite unjust. The foliage is feathery and graceful, but appears late in spring, a fact which prevents purchasers from recognizing attractions that do not exist during the time usually selected for their visits to nurseries. This defect, however is amply compensated for by a beauty which lingers on far into autumn. The masses of foliage vary much in appearance, now drooping and thick, and again sparse and irregular. A straight, tall stem, with a fine brown bark lends it a certain air of elegance, and the outline of foliage is usually somewhat pyramidal and symmetrical. Most trees have produced, at one time or another, weeping forms, which have been perpetuated by grafting or layering, and to this rule the Cypress offers no exception. Indeed, the more or less weeping tufts of foliage exhibited on almost every tree, would suggest at once the possibility of a truly weeping form presenting itself. Such a form does really exist, but is scarce and little known, and has been offered to the trade in limited quantities under the name of Taxodium distichum pendulum, or, in plain English, weeping deciduous Cypress. This tree does its weeping on a somewhat original plan, which is, however, on that account, none the less graceful. We find, indeed, the systems quite various by which different trees perform this operation of weeping. The Beech, for instance, throws out erratic branches, which sometimes seem to have hardly decided whether to go up or down, until they have extended some little distance from the parent stem. Evergreens, on the other hand, are apt to hug the trunk, and the umbrella-like forms of some Willows and Elms describe curves regular almost to primness. The Weeping Cypress, however, possessss the double attraction of assuming the most perfect curves, and at the same time an irregular grace that resembles somewhat that of the Weeping Beech. It gives us pleasure to call attention to this fine weeping tree, not only because it is little known and very beautiful, but also because we may thereby obtain increased means of producing varied effects by means of weeping trees. It is deserving of consideration that as yet little attempt is made to group weeping trees in designs by themselves. They are almost entirely employed as single specimens, or grouped with other trees, to their own decided loss of effect and beauty.—Samuel Parsons, in the "Country Gentleman."

The Danger of Yew Trees.—An important case has been tried in the Chesham (Bucks) County Court by Mr. J. Whigham. Mr. E. G. Crowhurst, the other day, summoned the Amersham Burial Board for £30, the value of a horse, which was alleged to have died owing to the defendants' negligence. It appeared that the animal was turned out to graze in a meadow adjoining a cemetery, and died on the 20th September from having eaten Yew growing in the burial ground. Mr. Whigham held that the defendants were bound to make the fence sufficiently high to prevent animals in the adjoining meadow eating the Yew, and he gave the plaintiff a verdict for 20 guineas.

Cattle Poisoned by Eating Yew Branches.—Another well-authenticated instance of the poisonous effects of the Yew upon cattle feeding on it has been recorded by Professor Wilhelm, of Graz, in a German paper. A bull and a heifer died suddenly at a cattle show in the South Tyrol, where they were on view. An investigation was held, which resulted in tracing the mishap to the presence of branhces of Yew interwoven in the floral decoration of their stalls upon which they had fed heartily.

THE EDUCATING POWER OF HORTICULTURE.

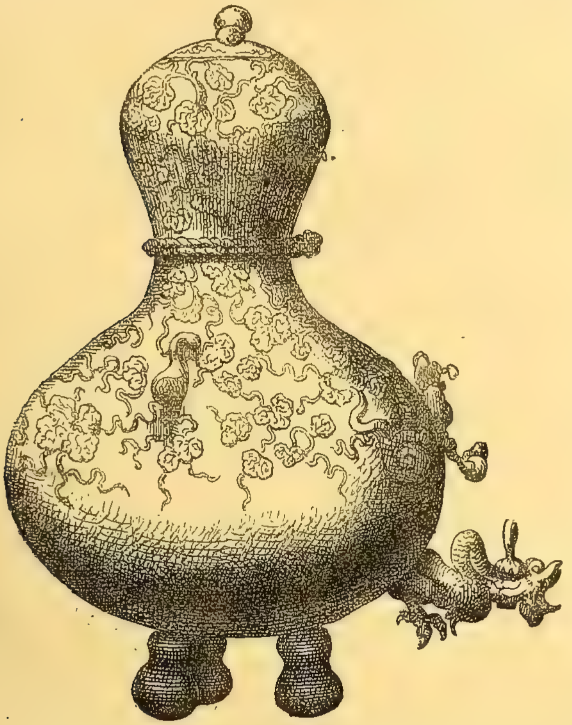
Horticultural pursuits claim an educating power measured only by the will of the worker. Using the term horticulture in its popular sense, as embracing all that belongs to the garden, lawn, and orchard, we see that it must reach, in some way, every home. This influence is circumscribed neither by sex, social position, occupation, nor age. Other occupations mould classes of men, serving to make them clannish or exclusive. But in the pursuits of horticulture, we find a tendency to elevate and broaden all our conceptions of true manhood, and to mould the taste and aspirations of the race. We may differ in politics, religious faith, and daily occupation, but we meet here on a common ground to recognise a common bond of sympathy and a common manhood. We shall see the educating power of horticulture when we consider the fact that it tends to give stability to a rural population. Nothing else can bind families to their homes like trees, fruit, and flowers. They are living things. We watch their growth from day to day. They are linked in memory often with the bright and sweet things of the past. We learn to love them and to love their history. The ordinary products of the farm soon ripen and are gone, but here nature slowly unfolds her purposes, requiring patient waiting and constant care for many years. Hence, men learn to love these trees. They give a peculiar charm, in the eyes of the owner, to the picture of the home. The farm crops, as a rule, hold the family only from spring to fall, and the owners of stock may roam, like their herds, from hill to hill, or from country to country; but he who plants trees, finds himself by the stongest possible ties—both of interest and affection—bound to the soil. The social, political, intellectual, and moral advantages secured by permanent population, cannot be measured. It is enough to know that the highest order of civilization can be reached alone by such a people. Horticultural pursuits serve also in an eminent degree to quicken observation and thought. New fields of inquiry are constantly opening to view. Each day will press home new questions. The answers we shall seek for either in our own experience or that of others; the result, with the better class of minds, will be a quickened observation, more careful study, and a more profitable social intercourse. The range of observation extends over a very wide field, and the enquiries demanding solution will lead to every department of natural science—not to science as taught in the class-room alone, but to nature herself, and to the practical application of science to the wants of man. For example, it is well to be able to determine the family, species, and variety of the plant; but it is more important to know how that plant can be used in the interest of man. Or again, it is not enough to understand the theory of hybridisation; but it is the work of the horticulturist to make a practical application of the doctrine, and reach desirable results. The laws, also, of bud growth, beautiful as they may be in theory, derive all their importance from a practical application. The mysteries that hang around the microscopic fungus growth, that seems to fill all that measureless world below the natural vision, take a strong hold on the mind of the scientist; but when they come to the farmer or horticulturist, in the shape of rust, scab—or it may be blight, sweeping away in an hour the hope of the year—they assume a practical importance out of all proportion to their size. These are not simply subjects of scientific inquiry, but practical questions involving the interests of man. Questions of like character, ranging through every department of natural science, will meet the horticulturist at every step. There will hence be secured, by the pressure of the surroundings, a practical mental culture, its extent and value measured, in a large degree, by the will of the man. Horticultural pursuits also favour a denser population than ordinary farming. Smaller farms are occupied, and residences are located nearer together. And hence larger privileges are conferred upon families and neighbourhoods. The very nature of the occupation brings men much in contact with their fellows, and more abundant opportunities are offered for social improvement, as compared with other occupations. The work of the horticulturist, both with respect to its influence upon himself and upon others, is a matter of grave moment. In the production of fruits and vegetables, he labours in the most efficient manner to supply the physical wants of man; but there is an almost infinitely wider range of work in supplying the higher wants of man's nature. That great truth that "man does not live by bread alone" has been accepted in a comprehensive sense. The flowers—those fragile emblems of a higher and purer life, that brighten for an hour the festive hall, or bend with dewy fragrance over our coffined dead—so speak that even the rudest mind must learn. The man of culture would add to the delights of home the means of gratifying his love for the beautiful in Nature. Trees, shrubs, and flowers are gathered from every clime, and each adds its own peculiar attraction to the home. Finished by the hand of experience and correct taste, that home, with its perfected framework, becomes a thing of beauty; and, while ministering to the wants of the owner, it stands as a teacher whose power for good no man can measure. Man cannot move through scenes of beauty without feeling their power. That beauty, in a certain sense, becomes a part of his being. While the horticulturist may gather many lessons of rich experience from his own work, that work will abide as an earnest and successful teacher many years after he has gone. Let him plant a beautiful tree; slowly, year by year, it raises its head heavenward. The planter and those who knew and loved him, pass away; but a hundred years hence, there stands the monument of his work in all its glory! For a long century it has taught the passing crowd, giving grateful shade to the weary, and engraving upon the mind of each passer-by its lines of perfected beauty. We say then to the boy, to the young man, and to the man of grey hairs—plant trees, plant orchards, plant forests, plant long-lived trees by the roadside and about your homes. Lay out your grounds with an eye upon the years of the far future, knowing that your work is to stand as one of the teachers of the ages to come.

Elridge Gale.

SENDING PLANTS TO BE NAMED.

In common with other journals treating of natural history, we frequently receive specimens of plants, with a request that we will name them. This we are willing to do, whenever possible, but our task would be rendered much more easy than it is at present if our readers would be a little more careful in their selection of the specimens which they send. The following hints are offered upon the subject, and their adoption, while it will materially lessen our own difficulties, will render our answers much more definite and satisfactory to our readers than has sometimes been the case. The knowledge of what to send, and how to send it, may therefore be acceptable to such of our readers as are in the habit of consulting us with regard to plants. Of ordinary flowering plants, a specimen should show at least flowers and leaves—two or more of each, when possible, to allow for withering or other damage in transit. The more perfect any specimen is, the more certain is the accuracy of its determination; so that, when possible, fruits and root leaves (which are often different from the stem leaves in form) should be added. With regard to Ferns, a fruiting frond should be sent whenever possible; it is often impossible to determine even the genus to which a barren frond should be referred. Of Orchids a single bloom is often as much as can be spared, and in these plants it is nearly always sufficient. With regard to British plants, especially in the many instances where from the nature of the case (as in the contents of a bird's crop) the material is but scanty, the locality whence the specimens came should always be specified: this of course also applies to foreign plants, apart from such as are cultivated. Ordinary plants may be sent after having been dried, as a botanist can recognise them in a dried state almost as well as when living. Orchid blossoms, however, are best sent fresh: they should be inclosed in a small tin box, or, if placed in one of slighter material, the address and stamp should be placed on an ordinary luggage label, which may be attached to the box with string; in this way the danger of smashing the box by the post-office stamp is greatly reduced, if not altogether avoided. When more than one plant is sent, each specimen should be placed in a separate paper, with number attached. With regard to the preserving of plants for a herbarium, regarding which we are frequently consulted, few things are more simple, and few receive less attention. It should always be borne in mind that, to the scientific botanist at least, the elegance or prettiness of a specimen is quite subordinate to its completeness. The great point to be kept steadily in view is the presentment of each plant as far as possible in its entirety; thus, roots and root-leaves, buds and fruits, seeds and seed-vessels, are at least as important as the stem-leaves and flowers which frequently form the sole representatives of a species in the collections of amateur botanists. With a view to future examination, it is a good plan to collect a few more flowers than are absolutely required, and place them in a little pocket or capsule upon the same sheet with the selected specimen; by this plan material for dissection is at hand without the risk of damaging the selected specimen. Plants may be dried very well in old newspapers, although both Newman and Bentall issue specially prepared drying-paper, which may be preferred when expense is no object; and the plants, while in process of drying, should be subjected to regular even pressure, sufficient weight being applied to keep the plants quite flat, yet not so much as to crush the tender parts. Ironing is adopted by some persons, and in some instances has the effect of preserving the colour, but it is not to be recommended. Plants having blossoms which tumble off very easily, such as the Speedwells, should be dried in the field when possible, and may well be placed in a small pocket-book taken out for that purpose. Some botanists recommend the drying of plants as soon as collected, and for that purpose take out with them a drying apparatus; but this incumbrance is neither necessary nor desirable. The larger fruits should, as a rule, be kept in small boxes, as if placed in the herbarium they make the pressure unequal, and, moreover, are difficult to fasten to the paper. The mounting of plants is a matter upon which different opinions are held, some preferring the Continental plan of placing the specimen loose in a folded sheet of paper, others gumming them firmly down, others attaching them to the sheet by means of strips of gummed paper placed across them. This, although the most troblesome, is on the whole the best plan.—"Field."

Chinese Vase Modelled after a Gourd.—It is noticeable that many of the finest forms of vases are modelled after fruits, though in few cases is the original so clearly seen as in the quaint vase of which we give an illustration.



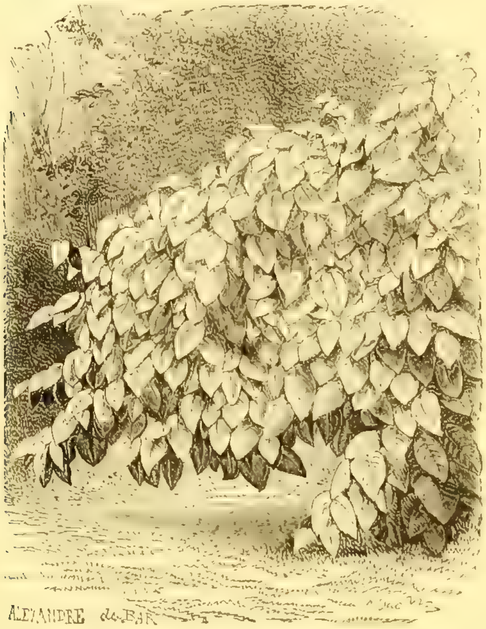
THE ENVIRONS OF LONDON.

Lord Beaconsfield in one of his novels speaks in tones of enthusiasm about the environs of London. There are few capital cities so dingy at the centre, but none so lovely in its ceinture. The suburbs of Paris are hardly to be compared with the suburbs of London. This loveliness is most apparent in the opening days of spring. The railway with its multiplied conveniences allures the tourist to far-off lakes and mountains and seaboard in our own and in other lands. This is well. But it is also well that the Londoner should know all about the neighbourhood of London. South and west the environs are especially beautiful. People who have not much time to travel, and like to travel near home, can hardly do better than make a circuit of the environs of London in a phaeton if they will, or, almost better still, by pedestrianising. Many pleasant expeditions of this kind do we gratefully recall. The course of the silvery Thames has always been especially pleasing to us, chiefly so when set free from the trammels of time and the subserviency to return tickets. We have followed the course of the imperial river from its *embouchure* to where its seven fountains spring beneath a cluster of leafy trees in an obscure Gloucestershire hamlet. It must be owned that the nearer Thames has very much changed its character within recent years. That fine Mall at Chiswick immediately develops into a congeries of miserable houses, in striking contrast to the famous villa where the Prince and Princess once gave their garden parties. Brentford is one long, dark, dirty street. The Middlesex bank of the river is for miles almost one continuous town; but the left bank, with the old towing-path, is free for miles. The broad reaches of the river seem clearer within recent years. The genuine Londoner knows no more thorough enjoyment than to wander forth on a holiday by rail or boat to Kew. Leaving the gardens on the left, he lounges by the river-side past Isleworth, on the opposite bank to that on which Richmond stands. Then he ascends the famous hill for that famous view, and devises further wanderings. He takes the route through Richmond Park, past Lord Russell's house to Ham gate, and then across the gorsy common to the long avenues of Ham House. The deserted appearance of the old magnificent mansion is positively a blot on suburban London. We think of the days when gay companies ascended the steps and walked through the avenues to the water-gate. Almost opposite is the Duc d'Aumale's place, which is now converted into the Orleans Club. From Twickenham ferry we row up to Teddington Lock, having refreshed ourselves at the ait on the river. At Teddington you are close to Bushey Park and the gardens and galleries of Hampton Court. We venture to say that this expedition is the pleasantest and most easily manageable of any in the vicinity of London. We prefer taking as the starting-point some spot on the Thames where it has ceased to be tidal, and wandering at will through the country-side. How many such a sweet spot there is!—the lazy fishing-village of Shepperton, and Arnold's Laleham close by; Blackpots, with the Windsor scenery at hand; Bisham Woods, Medmenham Abbey, Cliveden's fair domain, Pangbourne, and Streetly. Summer picture-like days come forth in memory—pure enjoyment, chance companionship, pleasant adventures; and all through the vision the silvery Thames comes gliding on with its melody and freshness. If you want to get to the really pretty places outside London, as a rule you must get out of the postal districts, and come nearer to the 20-mile limit. You will find lovely bits of landscape at times, so to speak, islanded amid bricks and mortar; but you have, as a rule, to get further and further away from town before you come to them. Many of us remember the time when Norwood Hill was the chosen resort of gipsies, and a shady country lane ran through the pretty village of Anerley. It is not so far to Chislehurst and the Crays, and there is many a lovely Kentish village as sequestered as in the days so long since gone by. We like the old driving-road from London to Brighton. It is a noble road, often with immense margins of broad turf, and the country lanes branching out on either side will lead you into noble scenery of wood and downs. Then we affect greatly the northern heights of London and the great North road, and own to a weakness for the Welsh Harp, liking the fishing, the *al fresco* life, but not bargaining for a torpedo. If you want a patch of perfect loveliness, whither a thousand painters have come in their day, commend us to Burnham Beeches, a tract free, open, richly wooded, as in the days of the Conquest.

Overdoing.—An evening contemporary writes to the following effect:—'Friends, kindly send no flowers.' Of late this request has begun to appear at the end of announcements of deaths in American papers, and, though at first sight quaint, is not less sensible. The custom of sending flowers to friends on any occasion of festivity or sadness is a German one, which, like many other Teutonic fashions, reached the United States of late years. It has, however been carried to extremes, until, from being a friendly token of sympathy, it has become something akin to an intolerable nuisance. When a child was born the house was never at rest for one hour from people calling with flowers; when the baby came of age, was married, or died, the floral compliments of sympathy were equally paid, often from people who could ill afford the expensive wreaths and bouquets which rich *parvenues* had made the rage. The tax was becoming a heavy one, and was often paid at a time when the mourners wished to be left alone to their sorrow. Not only this, but, as with the marriage cards in England and the betrothal cards in Germany and Scandinavia, the omission to send flowers on certain occasions was deemed a slight, and often ended in friends becoming estranged. There are a good number of other customs which might fitly follow the flower one. For instance, who has lived or travelled in Germany and not witnessed the burdens of costly bouquets which are piled on departing guests, often flurried with many things, and which floral gifts can only be conveyed at great personal inconvenience? Then there are the presents which must be given at Confirmation time, and at birthdays, and at marriages, and in France at Easter. These habits originated in the kindliest of feelings, but in the rush and hurry of modern life have become a burden. The poor bachelor in Paris is frequently forced to flee the city about Easter time to escape the Easter-egg tax, the observance of which often puts him under obligations to his tailor and his bootmaker; while many a family in Germany and Denmark is reluctantly compelled to look askance at cultivating intimate relations with a house whose many daughters will by-and-by bleed their purses for the presents which 'society' ordains the gift of on certain stated occasions. The cost of living is increasing out of all proportion to the increase of wealth; and if we are to be kept from bankruptcy and live in comfort, we must abate some of the little multiplied extravagance of social intercourse, even at the expense of a temporary wound to our generous souls."

POLYGONUM SACHALINENSE.

Among the plants which might well have illustrated Mr. Hemsley's recent notes on garden plants from the Japan region, there is one, which we have since had engraved, which is a notable addition to the free and vigorous type of herbaceous plants that of late years only have begun to be appreciated and properly placed in our gardens. This has come into cultivation subsequent to the handsome and vigorous Polygonum cuspidatum now popular where hardy plants are grown. It is even more vigorous than P. cuspidatum, and the leaves are very large, so much so as almost to merit the name of a fine foliaged plant. Our engraving is from a portrait of an isolated specimen taken last summer, and the engraving shows only a portion of the plant sufficient to illustrate its fine habit. The specimen in question grew as a gigantic isolated tuft on the Grass, in which way it has room to grow, and which also permits of its fine form being seen. It is well adapted for the wild garden, and also for association with the vigorous herbaceous plants on the turf in the pleasure ground. For those whose gardens will not admit of such special places for this and similar plants, a tuft, well placed on the edge of a shrubbery, will well repay the planter. It would, however, be best, not in the shrubbery, but just a few feet free of it.



Portion of a tuft of Giant Knotweed isolated on turf.

Coronilla glauca Out-of-doors near London.—A few days ago I noticed, in the garden of Mr. W. H. Hardy, Torrington Park, Finchley, a fine plant of Coronilla glauca growing out-of-doors, and full of flower. It is a bush 4 ft. high and 5 ft. through. Mrs. Hardy planted it there four years ago. It faces the west, and is protected by the house, which stands high and in an open position. The flowers are large, and the plant is in a very healthy condition, and certainly does not lead one to suppose that it should be grown in a greenhouse, which, I believe, it usually is. There is also a smaller plant on a southern aspect. Is the hardiness of these plants exceptional?—Robert Osborn, *Fulham.*

Holly and other Berry-bearing Trees.—Judging by appearances, there will be no lack of berries for church and house decoration this year, as was the case last season, although even then, in this neighbourhood, we had plenty and to spare. This year Holly trees are loaded to excess with berries, which are so plentiful on some trees as to give them, at a distance, quite a scarlet appearance, and both variegated and plain-leaved kinds are equally well furnished. Yew trees have also been so loaded that their branches were literally bent down with the weight of fruit, but now the birds have thinned them considerably. The same remark also applies to the Pyracantha and Arbutus.—W. D., *Wierton, Maidstone.*

PLATE CV.

RHODODENDRON NOVELTY.

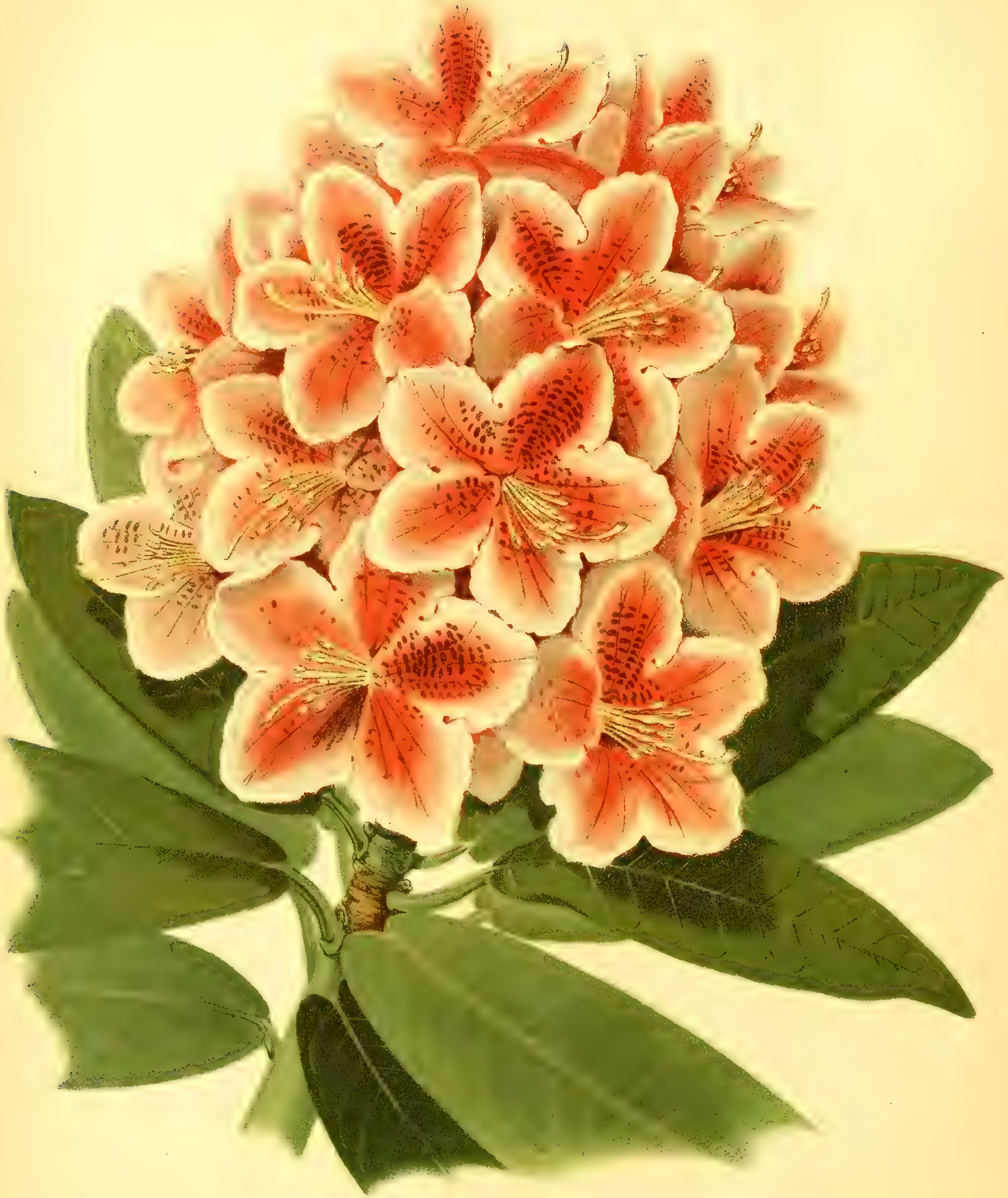
Drawn by H. HYDE.

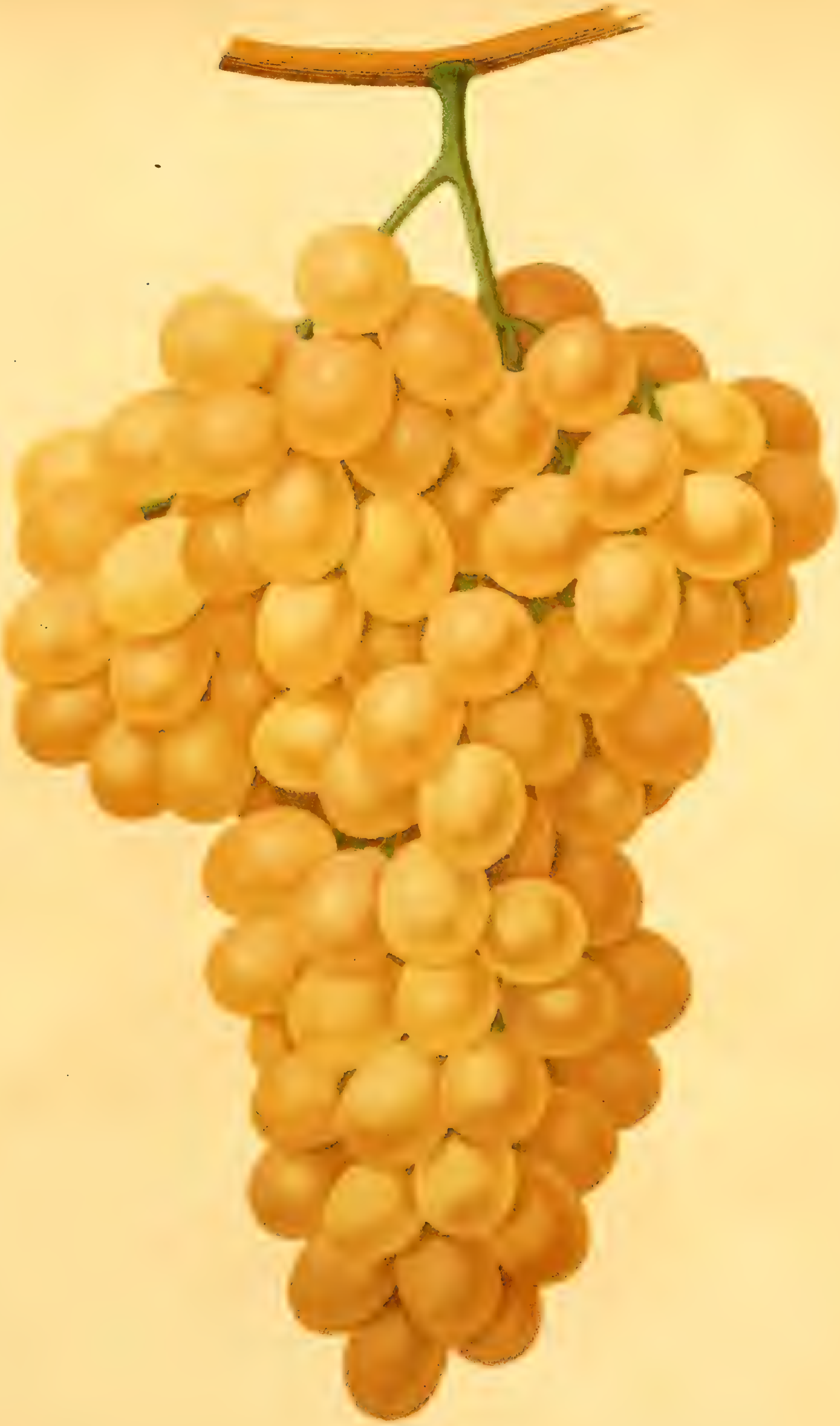
This very distinct Rhododendron was raised from seed in the nurseries of Mr. Anthony Waterer, at Knaphill, from whose richly-stored nursery it was sent to us for illustration. It will be seen that its distinctness consists in having the margins of the petals instead of the centre light in colour, varieties light towards the centre being plentiful. It is something in these days to get a really distinct new variety of Rhododendron, and to the best of our belief this is unique. It will probably in time give rise to a race of new varieties of this precious hardy shrub. Mr. Waterer has no account to give of its origin or parents. It came, like many other good plants, "among the rest" of the seedlings. When it first bloomed, five years ago, the plant was not a vigorous one, and Mr. Waterer, charmed with the flower, feared it might be a mere temporary sport; hence he was greatly pleased to see the new feature even more marked in the plants since they have become vigorous. It is a perfectly hardy kind.

Mate or Paraguay Tea.—Allow me to add a few words to the account given in The Garden of the Paraguay Tea (see p. 552). Like Chinese Tea, there are different qualities made and known to the natives. The principal kinds are, first, that which is made from the half-opened leaves; secondly, the leaves from which the midribs and principal veins have been removed; and, thirdly, the later leaves and young twigs, dried or roasted, and reduced to a powder. In this latter form it is packed very tightly into large bags, made of the skins of animals, or into the skins themselves, as may be seen in the Kew Museum, where there is an entire skin of the great ant-eater so packed. The unbroken leaves are put up into square packages of metallic paper, upon which is printed the name of the tea and of the firm selling it, and in this way it is a regular article of trade in most of the towns. These packages are very similar in appearance to the tinned paper packages of Chinese tea, often seen at grocers' shops in this country. With regard to the vessels in which the infusion is made, they are formed either of gourds or of earthenware; if of the former, they are either carved or mounted in silver, and if of the latter, they are more or less painted with various devices and glazed. The stem part of the gourd, as represented in the figure on p. 552, is not used as a spout but a handle, a spout being unnecessary in consequence of the infusion being sucked through the tube, or bombilla; and these bombillas, like the cups themselves, vary much both in the material used, and also in the elaboration of workmanship. The commonest is a simple tin tube enlarged at the base and perforated with holes; another kind is made of wicker-work, and the best of silver. These tubes, as well as the mounting of the cups, are often highly chased.—John R. Jackson.

Alphonse Karr and his Lilacs.—M. Alphonse Karr, whose "Voyage Around his Garden" may possibly be remembered pleasantly by some readers, is resuming the congenial work; but his final voyage is this time in another garden, quite remote from the first, and presenting, in many points, very different subjects for his agile and learned pen. The first was in Normandy, the present is at St. Raphaels, a fishing village near Nice, where he had spent more than a dozen years. It is a pretty nook, where the Pines come down from the Alps almost to catch the spray of the Mediterranean. Spite of the plentifulness of vegetation in Italy, there were no Lilacs at Nice, and M. Karr introduced into his garden all the varieties familiar to him, and others to which his attention was directed. They form a field, or, rather, a fairy forest. At the end of March they are all in bloom, and, being in great variety, the bloom is on some till the end of about three weeks.—W.

The Greek Oracles as Meterological Observatories.—Dr. E. Dohlen, in an interesting lecture published in Berlin in 1872, entitled "Die Orakel," endeavours to show that the earliest demand for prophetic knowledge among an agricultural community related to weather, and that the chief oracles were those of Apollo, the sun god, while also the earth and the sea had their shrines. Many of the earliest responses referred directly to weather; and the earliest prophets, Tiresias and others, are said to have understood the language of birds, or, in other words, to have drawn prognostics from their flight. If once the character of an oracle had been established by successful forecasts of weather, it is easy to see that political and social problems would be referred to the same authority, and the experience of those in charge of the shrines would enable them to dictate counsel which would at least bear a safe construction for their own credit.





PEARSON'S GOLDEN QUEEN GRAPE

(REDUCED FROM A Bunch ~~BRANCH~~ 15 INCHES LONG)

THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

(Continued from page 564).

Himalayan Region.

General Description.—The mighty range of mountains in North India is very lofty throughout, and some of its peaks are the highest in the world, Mount Everest and Mount Deodunga reaching an altitude of 29,000 ft., or more than five miles. Shrubs and small trees ascend to 12,000 ft. or more; and Myricaria germanica has been found up to 15,000 ft., and Caragana pygmæa up to 16,000 ft. Herbaceous flowering plants, belonging to such families as the Ranunculacæ, Cruciferæ, &c., occur in some parts at an elevation of above 18,000 ft. At this height the pressure of the atmosphere is not much more than two-thirds of what it is at sea-level, and the other climatal conditions are so different to those obtaining in this country, that the plants which have been introduced from time to time do not seem to have gained a secure footing.

Himalayan tree—The Bhotan Pine (Pinus excelsa).

Himalayan Bamboo.

Yet there are many very beautiful herbaceous plants growing between 9000 ft. and 18,000 ft. that would not be killed by the cold of our winters. Shrubs and trees growing above 8000 ft. or 10,000 ft., according to the situation, are hardy; but our ordinary winters, being too mild—or rather, perhaps, very little heat being necessary to stimulate them into active growth

Himalayan herbaceous plant—Saxifraga.

Himalayan shrub—Jasminum officinale.

—they suffer very much from late spring frosts, especially when quite young. Many of the handsome Coniferæ of this region are consequently unavailable for planting in this country. Nevertheless, there are some noteworthy exceptions, and almost all those commonly planted are very distinct and desirable, and hardy in the climate of London. In the temperate parts, such other genera than those mentioned below occur, as Euonymus, Rhamnus, Æsculus, Acer, Morus, Celtis, Ulmus, Quercus, Castanea, Rhododendron, Berberis, Magnolia, &c., &c. The climate generally is a very humid one, and in the eastern and central parts the average rainfall is from 200 in. to 600 in. in different localities. The latter is the largest average rainfall recorded for any part of the world.

Garden Plants from the Himalayan Region.

General List of Herbs, Trees, and Shrubs.

Clematis montana
,, orientalis, &c.
Meconopsis Wallichi, and several other species. M. horridula occurs up to a height of 17,000 ft.
Magnolia Campbelli—a magnificent species, still very rare in this country
Berberis nepalensis
Æsculus indica
Spiræa Lindleyana
Rubus biflorus (syn. R. leucodermis)
Potentilla atrosanguinea
,, nepalensis
Cratægus Pyracantha var. crenata, much superior to the South European form
Cotoneaster microphylla
,, buxifolia, and several other species
Saxifraga crassifolia
Cornus fragifera (Benthamia fragifera)
Aucuba himalaica
Rhododendron arboreum
,, campanulatum
,, Thomsoni, &c.
Nearly all the fine Sikkim species are hardy in some parts of the south-west, but not elsewhere.
Morina longifolia
Jasminum officinale
,, revolutum
Syringa Emodi
Polygonum Brunonis
Rheum nobile (recently introduced)
Pinus excelsa
Abies Morinda (A. Smithiana)
Cedrus Deodara
Juniperus squamata, and other species
Lilium giganteum, &c.
Thamnocalamus Falconeri (syn. Arundinaria falcata), one of the best and hardiest of the Bamboo tribe.

The North American Region.

General Remarks on the Climate.—From what has been said of the course of the lines of equal temperature, corresponding to those for the winter, summer, and annual means in the United Kingdom, across the North American Continent, it is evident that the vegetation of an immense extent of that country must be sufficiently hardy to thrive with us. The extremes of summer and winter temperatures are very great. Thus, at New York, which is about 10° further south than London, the summer is as hot as in the south of Europe, and the mean winter temperature there is about the freezing-point; whilst Quebec, in 46° 50′ N. lat., enjoys a mean summer temperature of about 65°, or equal to that of Paris, and a mean winter temperature of about 20°, or as low as that of St. Petersburgh. The significance of these facts has already been pointed out, but attention is directed to them again here because many North American trees that are hardy in this country fail to ripen seeds in consequence of the summer heat being insufficient.

Centres of Diverse Types of Vegetation.—The temperate part of North America might be sub-divided into several regions, characterised by different predominating types of vegetation. For example, the eastern and central States of the Union abound in a great variety of deciduous trees, as Maples, Oaks, Poplars, Magnolias, &c.; the plains of Nebraska, Kansas, Oregon, Utah, &c., are sparsely wooded, and present in places a rich flora of herbaceous plants, whilst other parts are very barren; and in the mountain ranges, on the western side of the Continent, most of the gigantic Coniferæ are at home. A very striking feature of the North American deciduous forests in autumn is the brilliant and varied tints the leaves of different trees assume. One valuable and distinct North American type, characteristic mainly of the eastern coast, is the genus Yucca.

History of Introduction of North American Plants.—Yucca gloriosa appears to have been one of the first plants introduced from North America, as Gerard (1596) enumerates this and Thuja occidentalis in his catalogue. During the seventeenth century Tradescant and Compton, the first of whom travelled in the country, introduced a considerable number of species, among them Robinia Pseudo-Acacia, Platanus occidentalis, Taxodium distichum, Celtis occidentalis, Lonicera sempervirens, Cratægus coccinea, Liquidambar styraciflua, Negundo fraxinifolia, Aralia spinosa, Menispermum canadense, Quercus coccinea, &c. The Tulip tree was introduced by the Earl of Norfolk, in 1663. During the eighteenth century a very large number of deciduous trees and shrubs was introduced from the United States, many of which are still very rare, and have probably been propagated very little, if at all, and not re-introduced. Most of the fine Conifers of the west mountain ranges, and the handsome flowering shrubs and herbaceous plants of the same side of the Continent, were discovered and introduced during the present century.

Endemic Genera.—Among the genera peculiar to North America, the following are familiar examples:—Calycanthus, Sarracenia, Liriodendron, Eschscholtzia, Ptelea, Symphoricarpus, Kalmia, Halesia, Nemophila, Pentstemon, Dodecatheon, Sequoia, Calochortus, and Yucca.

Representative Species in the Mediterranean Region, &c.—A few genera represented in North America, and in the eastern part chiefly, are also represented in the Mediterranean region by closely allied species or forms. Such are Platanus and Liquidambar. Of Lupinus, otherwise an American genus, extending to the south, there are several annual species in the Mediterranean region. These peculiarities in plant distribution have led to the supposition that in former times America and Europe were united by land. On the other hand, there are more genera which seem to indicate an Asiatic migration. Rhododendron is widely dispersed in the temperate regions of Europe, Asia, and America, though absent from large tracts. Azalea, if we regard it as a distinct genus, is represented in Asia Minor, China and Japan, and North America. Cercis and Philadelphus have a similar range.

Side-saddle Flowers.—The curious Sarraceniaceæ, or side-saddle flowers, with pitcher-shaped, radical leaves, are confined to North America, with the exception of the monotypic Heliamphora, a native of Venezuela. There are about six species of Sarracenia, chiefly inhabiting the marshes of the eastern States; and Darlingtonia californica is only found on the western side of the Continent.

The lists which follow form together only a small selection of hardy North American plants.

Garden Plants from the North American Region.

Deciduous Trees having more or less Ornamental Flowers.

Magnolia tripetala
,, acuminata, &c.
Liriodendron tulipifera
Tilia americana
Ptelea trifoliata
Æsculus (Pavia) californica
,, ,, rubra, &c.
Acer rubrum
Robinia Pseud-acacia
Cladrastis lutea
Cercis canadensis
Prunus virginiana
Cratægus coccinea, &c.
Amelanchier canadensis
Halesia tetraptera, &c.
Catalpa bignonioides

Evergreen Trees, Exclusive of Coniferæ.

Magnolia grandiflora, hardy only in the south and west.

Deciduous Trees with Inconspicuous Flowers.

Acer dasycarpum
,, saccharinum
,, striatum, &c.
Negundo fraxinifolia
Rhus typhina
Gleditschia triacanthos
Liquidambar styraciflua
Nyssa aquatica
Laurus Sassafras
Morus rubra
Planera aquatica
Ulmus americana
Celtis occidentalis
Platanus occidentalis
Carya olivæformis
,, alba
,, glabra, &c.
Juglans nigra
Quercus coccinea
,, alba
,, rubra
,, tinctoria
,, phellos, &c.
Fagus ferruginea
Ostrya virginica
Populus angulata
,, balsamifera, &c.

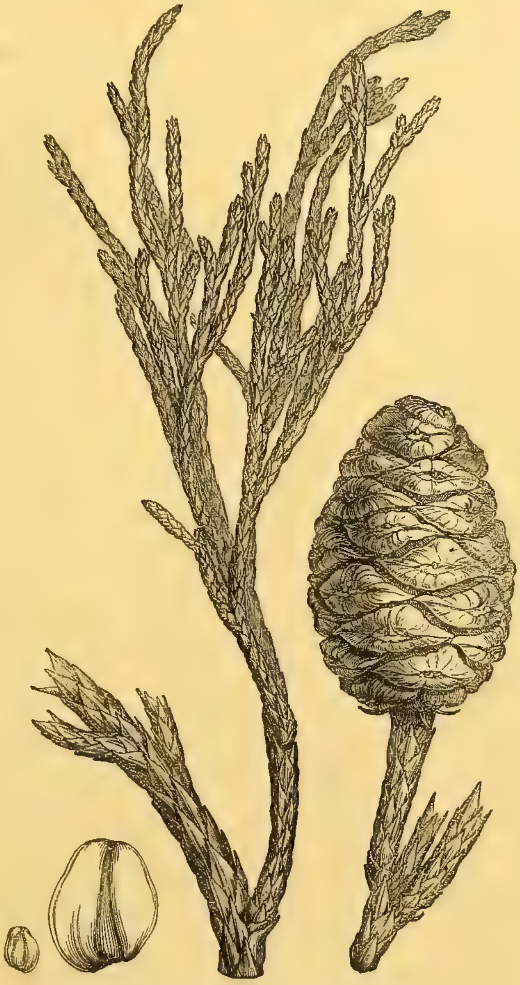
Trees and Shrubs of the Coniferous Family.

Pinus Banksiana
,, muricata
,, insignis
,, mitis
,, Benthamiana
,, macrocarpa
,, Strobus
,, monticola, &c.
Abies nigra
,, alba
Abies Menziesi
,, Douglasi
,, canadensis
,, balsamea
,, nobilis
,, grandis
,, amabilis, &c.
Larix americana
Sequoia gigantea
,, sempervirens
Juniperus virginiana
Libocedrus decurrens
Thuja gigantea
,, occidentalis
Cupressus Lawsoniana
,, macrocarpa
,, nutkaensis
,, thyoides
Taxodium distichum
Torreya californica

American Flowering Tree (Catalpa syringæfolia).

American Deciduous Fowering Shrub (Azalea).

North American Evergreen Shrub (Kalmia latifolia).



Western American Conifer (Sequoia gigantea).

American Flowering Shrub (Stuartia virginica).

GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS: TREES AND SHRUBS FROM THE NORTH AMERICAN REGION.

Hardy Plants from the North American Region.

Shrubs chiefly remarkable for the Beauty of their Flowers.

Those preceded by an asterisk (*) are evergreen.

Calycanthus floridus
,, occidentalis
Berberis (Mahonia) Aquifolium
Ceanothus americanus
,, azureus, &c.
Stuartia virginica
Æsculus (Pavia) macrostachya, and other species
Cerasus ilicifolius
Spiræa Douglasi, &c.
Rubus spectabilis
,, odoratus
Philadelphius Gordonianus
,, grandiflorus, &c.
Ribes aureum
,, speciosum
,, sanguineum, &c.
Aralia spinosa
Symphoricarpus racemosus
*Andromeda Mariana
* ,, floribunda
*Kalmia latifolia
* ,, angustifolia, &c.
*Rhododendron maximum
* ,, catawbiense
Azalea calendulacea
,, nudiflora, &c.
*Gaultheria Shallon
Elæagnus argentea
Maclura aurantiaca
Comptonia asplenifolia
Agave americana
Yucca gloriosa
,, recurvifolia
,, filamentosa, and other species

Climbing or Trailing Shrubs.

Clematis viorna
Menispermum canadense
Vitis quinquefolia
Lonicera sempervirens
Bignonia capreolata
Tecoma radicans
Aristolochia Sipho

Herbaceous Plants, most of the Plants represented by several or many Species.

Aquilegia
Delphinium
Sarracenia
Darlingtonia
Eschscholtzia
Lupinus
Clarkia
Œnothera
Godetia
Aster
Solidago
Phlox
Gilia
Nemophila
Pentstemon
Mimulus
Monarda
Dodecatheon
Cypripedium
Thalia
Calochortus
Lilium
Pontederia
Tradescantia
Adiantum, &c.

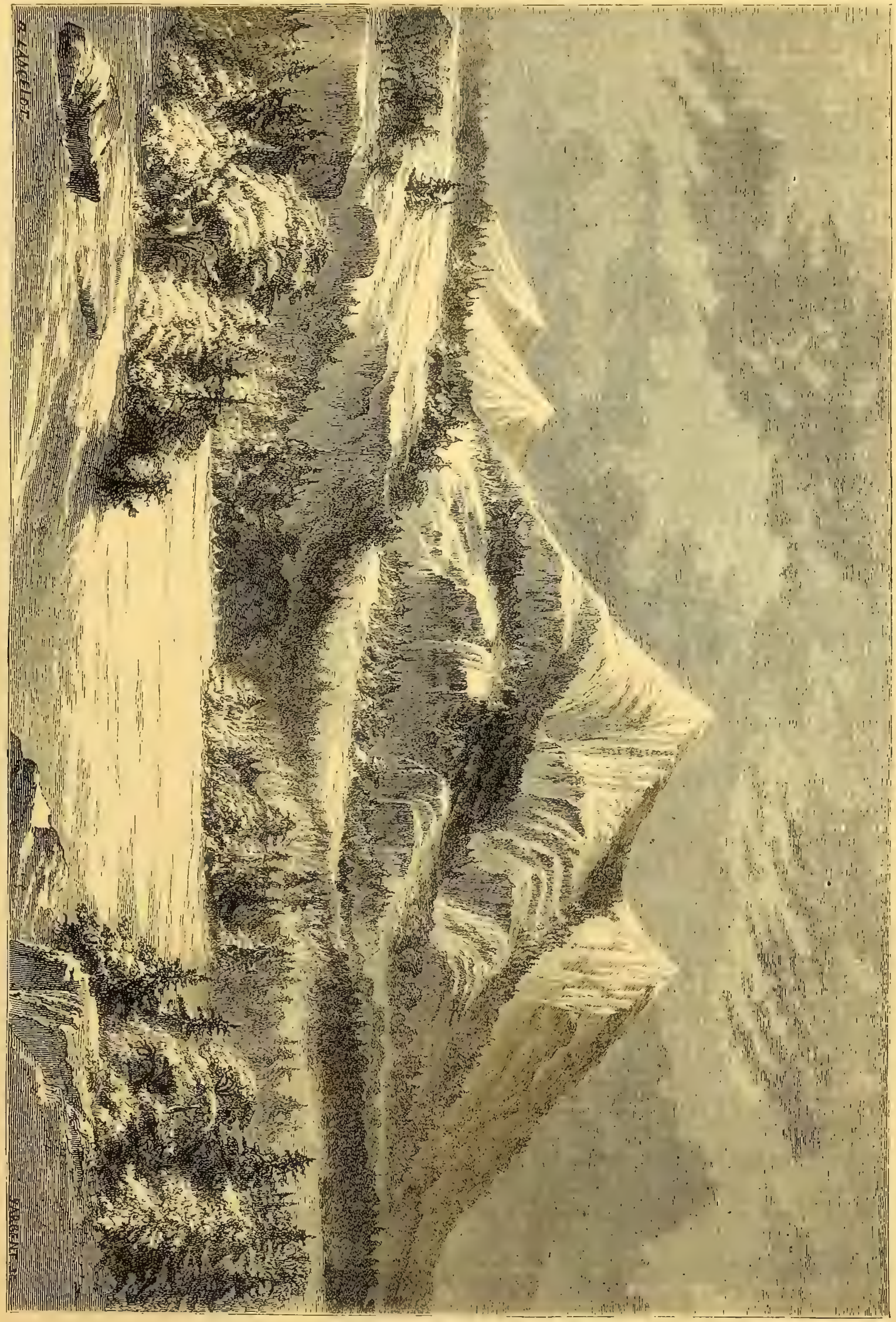
W. B. Hemsley.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Stoves.—Amateurs who possess a plant stove, wherein subjects that require a high temperature to cultivate them are grown, with the usual centre bed, in which fermenting material is placed, will find this the best time of the year to renew the tan. Where there are means for introducing a sufficient body—say from 2½ ft. to 3 ft. in depth—it will retain its heat for a long time, varying little for the first eight or ten weeks, during which time it will keep up a temperature of from 85° to 90°. There are many disadvantages attendant upon plunging stove plants indiscriminately in bottom-heat, which, with all but a comparatively few things that do not succeed except their roots are kept warmer than their heads, more than counterbalance the benefits obtained from bottom-heat; but nevertheless, were it only on the score of economy in fuel, the use of tan will be found an advantage, inasmuch as the high temperature it so long maintains assists materially in keeping up the requisite heat in the atmosphere, to which may be added the invigorating influences arising from the gases which it gives off whilst in a state of fermentation; but to reap the full benefit from it, it should be used whilst quite fresh, as soon as discharged from the vats, and not after being allowed to lay for a considerable length of time exposed to the open air, fermenting in a body. With those who follow out the practice of plunging their plants in bottom-heat, it is necessary to counsel caution in seeing that the pots are not put in too deep at first, or the roots may be wholly destroyed, or seriously injured by overheating of the material during the first six weeks after the tan is introduced. Where a body of it exists, such as already indicated, bulbs, like Eucharis amazonica, or Amaryllis, that completed their growth early, and have now had sufficient rest, will have their flowering considerably accelerated by plunging in a bed such as that under consideration, first seeing that the soil (which, during the time of resting, will have been kept comparatively dry) is sufficiently moistened, after which, they, in common with all other plants that are plunged, will require much less water than where no plunging is resorted to, on account of the moisture absorbed from the plunging material through the pots. Where there is any difficulty in procuring tan, and there is at command a good body of the harder description of leaves of deciduous trees, such as Oak or Beech, these may be used; they will not heat nearly so much as the tan, but will produce a good genial warmth, and improve the condition of the atmosphere of the house.

Peach Houses.—I frequently meet with amateurs who express a wish to force Peaches, but are reluctant in making the attempt, under the impression that there is much difficulty in procuring a crop of this fruit grown under the influence of artificial heat; yet such by no means is the case, provided a few essentials in their cultivation are kept in sight. No doubt where very early forcing is attempted it is sometimes a difficult matter to get a sufficient quantity of fruit to set for the production of a full crop, but amateurs will generally be satisfied if their forced Peaches are in early enough to have the fruit consumed previous to such as is produced in a house where mere protection is given to the trees that are allowed to come gradually on by solar influence, without the further use of fire-heat than such as may be necessary to keep the bloom safe during the nights when sharp frosts occur. One source of failure, by the buds falling off previous to the bloom opening, frequently happens through the soil in which the roots exist in inside borders being allowed to get too dry; in wet localities, where there is proportionately little sun, this root-drying process is often carried out through the autumn under the impression that it tends to ripen up and mature the wood; but this must be effected by other means, as it is not in the nature of the Peach, whose vital energies are always more or less in motion, even after the leaves have fallen by the slow but gradual development of the buds, to have its roots in soil devoid of moisture; another prolific source of the bloom-buds falling may be frequently traced to over-strong dressings with the different Insecticides that amateurs are advised to apply to their trees under the assumption that their use will insure a crop, whereas, unless employed with caution, they are often the direct means of destroying it. Trees that are intended to be started so as to produce a crop about the time already indicated, may at once be pruned, retaining sufficient but not too many bearing shoots, the result of which would be an overcrowded condition in both the young wood and foliage, consequent upon which neither could receive enough light and air to get properly matured and solidified, and the current year's crop of fruit would, in like manner, suffer. If any dressing of the trees be attempted, with a view to the destruction of the eggs of insects that may exist, I should recommend nothing further being employed than sulphur, at the rate of 3 oz. to a gallon of water, 2 oz. of soft soap, a little soot, and as much clay as will bring the mixture up to the consistency of moderately-thick paint, applying it over the whole surface with a brush, being particularly careful that in the operation the brush is used very gently upon the young wood where the fruit-buds exist; the trees should then at once be tied in their places and allowed to remain until the time comes for starting them, which may be about the middle of February, at which time of closing the house they may be kept about 45° in the night, rising the temperature slightly as the trees progress. Although, as I have already said, Peaches, started at this time, are more manageable in getting the blooms to set freely than when forced earlier, nevertheless, it is well to use means calculated to insure success, as if many more fruit are formed than the trees can carry, thinning is an easy process; during the time when the bloom is open means should be taken every day, even if only for an hour or two, to get the atmosphere of the house quite dry, this will have an equally drying effect upon the pollen, which is of the greatest importance in fertilizing the flowers; no difficulty will be experienced in this if the weather happens to be bright and sunny, as by giving the necessary air whilst the sun is shining on the glass the desired end will be effected; but should it be cold, wet, and cloudy, it will be requisite to use as much additional fire-heat for a few hours during the middle of each day, as will permit of enough air being given to induce this dry condition of the atmosphere; whilst it is in this state many growers go over the trees with a camel's hair brush, dispersing the pollen on the flowers individually, or use a larger brush made of the softest Turkey feathers; but with Peaches, forced no earlier than those in question, I have always found that, by briskly tapping the branches or trellis to which they were tied with the hand so as to produce vibration, a good set could be insured. As soon as the fruit is fairly set, the trees should be syringed with tepid water every day, and see that the soil is well moistened down to the bottom of the border. Commence thinning the shoots early, so as not to waste the energies of the trees in making a quantity of useless wood, yet do not carry out the operation too far at a time, but do it by degrees; the same holds good with thinning the fruit. The temperature may be increased gradually in the day as the weather advances, and also in the night, but 50° will be enough for the latter, until the crop is further advanced; care must be taken that it is never allowed to rise too high in the day. This is a matter of vital importance until the stoning process is complete, and with small houses close attention is required, as they fluctuate through the influence of the sun much more rapidly than those of considerable size, where a larger body of air is enclosed. Until after the stoning is completed, the temperature should never be allowed, even for a single hour, to rise above 80° without air being freely admitted; by the necessary timely admission



GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS: PINES IN THE HIGHER REGIONS OF THE CALIFORNIAN SIERRAS.

of air in the morning anything near the above heat will not occur. It is in the afternoons, when the houses are closed, as they should be sufficiently soon with a view to economising fuel, and the production of a genial growing atmosphere, that it sometimes happens that the sun will on a sudden break out fiercely, and in the case of small houses will, in a short time, run up the temperature a great deal too high, the effect of which, as previously stated, often being to cause the fruit to drop. After the stoning process is fairly completed, more heat may be applied. Never by any means overcrop, it is always unsatisfactory in one if not two ways; where more fruit is left than the trees can support, it is deficient in both size and quality, and the bearing capabilities of the trees are permanently injured. By the time the crop is half-grown, all leaves that intercept the sun from each fruit must be removed, without which that great essential in the appearance of a well-grown Peach—colour—will be wanting. All through the different stages of growth sufficient air must be given, of course regulated by the earlier or later period and the state of the weather, but nothing like a close atmosphere must be attempted with this fruit, and, as the crop commences to ripen, admit more air, with a drier condition of the atmosphere. In the early stages of growth, as soon as the trees are out of bloom, continual watchfulness must be exercised for aphides, which often, about that time, make their appearance; their presence is easily detected by a slight curling of the leaves; no quarter must be given them, or serious injury will result. There is no better remedy than by syringing with tobacco-water, and, after the first brood are thus exterminated, the daily syringing of the trees with clean tepid water to promote healthy growth, and to keep down thrips and red spider, generally prevents any further trouble with aphides. After the crop is gathered, endeavour to preserve the leaves in a healthy state, free from red spider, by the use of the syringe or garden-engine, until they begin to show signs of falling naturally. During the whole period, from the starting to the completion of the crop, as also afterwards, the soil should be kept in a moister condition than necessary for most other fruits. Nectarines, which are nearly allied, as a matter of course conform to the same treatment, and amateurs who are disposed to try their hands at Peach-forcing may do so with a fair prospect of success by following the treatment thus briefly detailed.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

December 24.—Potting a few Vallotas. Painting Fig trees in Fig house with a mixture of soot, sulphur, lime, and Tobacco-water, and getting them tied in. Cleaning dead leaves from Violets in frames, to prevent damp. Pruning Vines in second Muscat-house. Cleaning up the pleasure-grounds and rolling down firmly all newly-laid turf; cutting evergreens for Christmas decoration.

Dec. 26.—Getting into gentle heat a few old Fuchsias, to supply cuttings. Getting a newly-made border planted with Tea Roses. Giving early Asparagus a little warm manure-water. Looking over the Grape room, taking out bad berries, and filling up the bottles where required. Washing the paint and glass in second Peach-house.

Dec. 27.—Sowing Mustard and Cress. Pruning second Peach-house, and getting the shoots tied in. Cutting and tying in Chinese Arbor-vitæ hedges. Cutting down and layering some old Thorn hedges, and putting in young plants where required. Getting the Vines in second Muscat-house cleaned and painted over with composition; also forking up the border, and giving a top-dressing.

Dec. 28.—Potting 100 pots of French Beans, and earthing up a more forward lot. Getting manure on to the land whilst the weather is dry. Planting Yew hedges for protection. Getting on with the digging and trenching as fast as the weather will permit. Making another Mushroom bed, and turning over manure to sweeten.

Dec. 29.—Getting into gentle heat a few more Lily of the Valley, Deutzias, Dielytras, Hyacinths, Cinerarias, and Roses. Looking over fruit-room; also Potatoes and Onions, and removing any that are bad. Tying mats. Making labels. Cutting shreds. Cleaning nails. Fruits in use for dessert:—Pines, Grapes, Pears, Apples, and Nuts.

WHICH IS THE BEST PAVEMENT?

The judges of the group containing exhibits of materials used in paving, at the late Philadelphia Exhibition, have made an interesting and important report on the subject, and, as the latter is one that closely concerns the public, the conclusions of the judges are given at length, as follows:—

Wooden pavements have had a fair and patient trial in the United States, and are now very generally condemned as to streets subjected to heavy traffic. They are slippery in wet weather, and are very perishable from their inability to resist either the wear of the street traffic or the causes of ordinary decay.

Durability.—Assuming each of the pavements to be excellent of its kind, and the foundation to be solid, so that no ruts and depressions, except those produced by actual wear, can be formed, tough stone blocks will possess the longest life of the three, and wooden blocks the shortest, asphalte lying between the two, and very near the stone.

As to first cost, the order of cheapness is given thus: First, wooden blocks in America; second, asphalte, and third, stone blocks, and as to cost of maintenance and repair the order is thus placed: Economy of yearly maintenance, inclusive of first cost, good stone stands first, asphalte second, and wood third. In facility of cleaning the order is first, asphalte, second stone, and third wood, whether the cleaning be done by sweeping or washing. Stone is, of course, the noisiest pavement, and the difference between the slipperiness of the wooden, asphalte, and stone pavements is not very great, supposing the street to be kept reasonably clean. The deductions of the jury are as follows:

In respect, therefore, to the comfort and convenience of persons using the street as well as those residing upon it, the order of merit would seem to be asphalte, first, wood second, and stone third, for all streets except such as are habitually crowded with heavy and busy traffic, in which case stone must be placed first and asphalte third.

The hygienic objections to a pavement of granite blocks are, first, its constant noise and din, which exert an injurious effect upon persons suffering with nervous diseases, and especially upon infants and all classes of invalids; and, second, its open joints, which collect and retain the surface liquids, and throw off noxious vapours and filthy and unwholesome dust.

Exceptions to wood may be made upon the same grounds, and, in addition to this, the material itself is subject to inevitable and often to early decay and decomposition, in the process of which poisonous gases and noxious miasma are set free.

M. Fonssagrives, professor of hygiene in the medical school at Montpellier, France, expresses the deliberate opinion "that a city with a damp climate, paved entirely with wood, would become a city of marsh fevers." He also says, in speaking of asphalte pavements, that "the absence of dust, the abatement of noise, the omission of joints—permitting a complete impermeability, and thus preventing the putrid infection of the sub-soil—are among the precious benefits realized by asphalte streets."

Considered, therefore, with respect to the health of the people, asphalte stands conspicuously first, stone second, and wood third in the order of value and merit.—"Philadelphia Enquirer."

Mr. Gladstone on Timber-felling.—The "Sheffield Telegraph" says that a firm of manufacturers in that town lately forwarded to Mr. Gladstone one of their original American patent axes, which they make a specialty of. The blade was of polished steel, and the handle of Hickory. Acknowledging the gift, Mr. Gladstone writes:—"December 13. Gentlemen,—I am very glad you have added that useful article, the American axe, to the list of our home productions, and I thank you for favouring me with a specimen which seems, as much trial as I have made, to possess all the merits of the original. I find it necessary to study efficiency in proportion to weight, and it is under this issue that I think the American axe comes out well, especially for soft or free-grained woods. The handle is, I think, excellent; but I always wish it were cut straight across at the end, at a right angle to its direction or axis.—I remain, gentlemen, your faithful servant, W. E. Gladstone." The same paper publishes the following correspondence which has taken place between Mr. Henry Clayton, grocer, of Clay Cross, and Mr. Gladstone:—"Clay Cross, December 6.—Right Honourable Sir,—A timber feller named Hopkinson, who claims some celebrity in that line of business in Clay Cross, who is fifty-four years of age, and who is really, according to his age, considered one of the best timber fellers in Derbyshire. He is particularly anxious to measure himself with Mr. Gladstone in that line either in Hardwick-park, or Chatsworth-park, or anywhere else, as Mr. Gladstone thinks proper. He also desired me to say that he would stake a sovereign that his (Hopkinson's) tree would be down before Mr. Gladstone's tree, taking them equal in circumference. Hoping you will favour me with an early reply to the above solicitation, in order that I may communicate your decision to Hopkinson on the above subject, I have, &c., Henry Clayton, Clay Cross."—Mr. Gladstone's reply is as follows:—"December 12.—Sir,—I regard the challenge which you have transmitted to me as a great compliment; but I at once give in. I never had pretensions to excellence; and if I had had them, by this time, from age and other causes, they would have been lost. I wish your friend may long enjoy his laurels.—Your faithful servant, W. E. Gladstone."

THE FRUIT GARDEN.

A WEST OF ENGLAND FRUIT NURSERY.

The Merriott Nurseries, Crewkerne, celebrated for their fruit trees, are situated in one of the pleasantest parts of Somersetshire. The climate is warm and genial, and the soil is well adapted for the growth of fruit trees. To these nearly thirty acres are devoted, and a considerable acreage is also planted with forest trees and shrubs. Amonst the latter, those that will withstand the sea-breeze are made a speciality, there being in this district a growing demand for sea-side shrubs. Fruit trees, however, constitute the staple stock. Of Apple trees alone there are said to be over 1200 kinds, Pears being in proportion. Growing so many varieties has its disadvantages as well as advantages, for sometimes trees may be kept for years and never asked for, thus occupying space which might be more profitably used. In addition to young saleable trees, there are also in this nursery hundreds of fine permanent pyramidal trees grown for the sake of their fruit, with which that of doubtfully-named kinds is compared. One tree of each kind of Apple, Pear, Plum, and other fruits is planted along the sides of the walks in alphabetical order, a great advantage as regards nomenclature; for it is not by the fruit alone, says Mr. Scott, that we can form a correct opinion as to the name of any particular kind, but by comparing the wood and veination of the leaves, the latter not being affected by climate or soil, as in the case of the fruit. Pears are for the most part grafted on the Quince stock, but many kinds do not fruit so well under these conditions as they ought to do; therefore, strong-growing sorts, such as Beurré de Amanlis, are first grafted on the Quince, and the following season other kinds are grafted on them. Marie Louise and Louise Bonne of Jersey, if grafted direct on to the Quince, do not fruit for some years; but if double grafted, good fruiting trees are obtained the second year afterwards. Other kinds, however, do best under reverse circumstances, and it is only by years of patient experiment that it can be determined under what conditions different kinds succeed the best. Apples on both the Paradise and the Crab stock appear to thrive luxuriantly. It is a singular fact that in so large a collection of Apple trees, both young and established, as exists in this nursery, as well as in the immediate neighbourhood, not a trace of American blight can be found; indeed, Mr. Scott informed me that he had proved beyond doubt that it would not live thereabouts; even trees brought to the nursery, though sadly affected by it, have, in a short time after being planted, recovered. It must not, however, be inferred that trees from this locality planted elsewhere will not be liable to be attacked by American blight; on the contrary, if taken where it exists, they would no doubt in time be as liable to it as any others; but the fact, nevertheless, shows how much more the successful culture of fruit depends upon soil and climate than upon any art which man can bring to bear upon it. Of Apples in this neighbourhood there is this year a great scarcity. There was a remarkably fine show of bloom, a great proportion of which set, but the sudden alternations of heat and cold in spring caused nearly every fruit to drop. Cider Apples, however, appear to be plentiful in some parts of Somerset and Dorset. A cider Apple grown in the Merriott Nurseries, named Hangdown Horner, is a very peculiar kind, owing to its tendency to weep; in whatever form the tree is grown, unless kept upright by means of strong stakes, the branches will soon bend to the ground. It is an immense cropper, even in its young state, and would be valuable as an ornamental tree in shrubberies and similar positions. Cherry trees, which are grown in large quantities, thrive luxuriantly, making shoots every season from 3 ft. to 4 ft. in length. They are mostly grafted on the Mahaleb stock, but there are a few kinds which will not grow satisfactorily on it; these, therefore, are worked on the common Cherry or double-grafted on strong-growing kinds, as in the case of Pears. Grafting takes place in February, and such trees as are transplanted after the graft has become established are planted deep enough in the ground to just cover the point of union between stock and scion. Peaches and Nectarines occupy large plots of ground, and are very healthy. At the time of my visit—the middle of October—all superfluous growth had just been cut off them, in order to admit as much sun and air as possible to ripen the wood. Several large Apple and Pear trees here had been completely divested of their outer bark, an operation which had been done for an experiment in order to get rid of canker. This kind of treatment seemed to have the desired effect; as far as could be seen the trees had not suffered in the least, and the bark was gradually growing over the bare stems. Such operations should, however, be conducted with caution.

The approach to this nursery passes through long avenues of healthy Conifers. Narrow borders contain dwarf plants of Retinospora ericoides, and other interesting kinds, and I also noticed Cryptomeria elegans, Araucarias, and golden and green-leaved Thujas, intermixed with flowering plants, and here and there a glimpse was caught of the richly-coloured beds of autumn Colchicums. Two fine plants of Pampas Grass were also growing here, each of which bore over seventy plumes, on stalks from 12 ft. to 15 ft. long. A pair of plants of the graceful Arundo Donax were likewise each provided with from fifty to sixty strong stems, 12 ft. high, and as thick as a good walking-stick. In winter a little protection is given to the roots of this Arundo, which is all the attention it requires. Large specimens of the Cockspur Thorn, laden with scarlet fruit, were remarkably showy, and Cotoneaster microphylla, grown as a standard from 6 ft. to 8 ft. high, and the branches allowed to droop to the ground, was very effective, covered, as it was, with coral berries. Magnolia grandiflora, grown in the form of pyramids, was also very attractive, as were likewise examples of Weeping Holly, and the sweetly-scented, white-flowered, Camellia-leaved Ligustrum macrophyllum. Phormium tenax, Melianthus major, and Aralia Sieboldi all grow freely here in the open air, and remain undisturbed for years. The houses consist of span-roofed structures for sheltering tender plants and raising Ferns and other decorative plants. In one house were noticeable neat plants of the scarlet-flowered Russelia juncea and Coprosma Baueriana planted out, and covering a large space of rafters, and, besides being ornamental, furnishes abundance of cuttings for stock. C. S.

Mistakes in Buying Fruit Trees.—Many years ago, when the different sorts of fruits were little known, and the difference between good and poor varieties was not so well appreciated as now, it was common for purchasers of trees at the nursery to select large trees of handsome growth, without much regard to anything else. Since that time, purchasers generally have learned the importance of selecting the best varieties, but they still attach too much importance to a handsome top, and forget the roots. When a symmetrical head is connected with a mutilated root, it often occurs that more anxiety is shown to save the top entire than to transplant the tree in the best manner. Some would choose a handsome pyramidal form, with deficient bottom, before a less attractive tree as regards form, with a full and perfect mass of fibres. The one, if it lives, may recover its vigour in two or three years; the other, properly attended to, will be scarcely checked in growth by removal, and a few years hence will make the finest appearance of the two. As commonly taken up by nurserymen, trees are necessarily deprived of a large portion of their fibres. Before, or at the time of setting out again, these must have their tops lightened by pruning back a portion of the young shoots. The larger the tree, the more important the operation. But the trouble is, the planter dislikes to lose any of the fine top, and leaves it untouched, often to the serious detriment of the tree. It was for this reason that a large planter found that badly-shaped trees always grew better than handsome ones. They were bought at lower prices, and the purchaser was willing to cut them back. Medium or small trees do better than large ones for three reasons: 1. The roots are more easily taken up entire. 2. They are swayed less by winds. 3. They are more apt to get the required pruning back, as the owners are not afraid to use the knife.—"Country Gentleman."

Preventing Vines from Bleeding.—I know of nothing which stops bleeding so effectually as joiner's knotting. After pruning, take a brush and daub it on the cut parts, when the surface will become covered as it were with glue, and no sap will ever find its way through it.—M.

The Victoria Plum.—This is the surest fruiting Plum in cultivation. It does equally well as a standard or bush as against a wall. This year it produced double the quantity of fruit of any other sort, and in other seasons, when there has hardly been a fruit on any other variety, the Victoria has been loaded. Although generally classed amongst culinary Plums, it is quite admissable as a dessert variety.—Cambrian.

PLATE CVI.

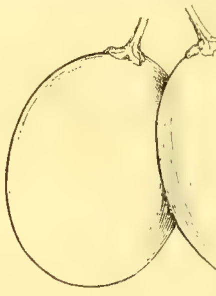
PEARSON'S GOLDEN QUEEN GRAPE.

Drawn by Mrs. DUFFIELD.

It is no easy matter in the present day—in this age of competition and rivalry—to produce anything which shall hold its ground against the attacks of critics, and stand the test of time without being swept away by the stream which is ever carrying away into oblivion the changing fancies of the public taste. It is, indeed, a great merit to have given something to the world which shall keep alive the fame of its author long after his work is done. Every gardener in the midland counties is familiar with the name of Pearson, the horticulturist. He was a true lover of the gentle art. Gifted with great natural talent, aided by careful training, he devoted his time and attention to fruit culture, particularly to improving the qualities of different kinds of fruit. His extensive nursery grounds at Chilwell, near Nottingham, were specially adapted for his experiments in this direction. Among hardy fruits, we have a seedling Filbert called Pearson's Prolific, an excellent variety, dwarf in habit, and an abundant bearer; trees 2½ ft. high are frequently laden with nuts. In dessert Apples, we have Pearson's Plate, a delicious little Apple of the first quality and resembling the old Nonpareil and Nottingham Pippin, a second rate Apple of strong, vigorous growth, and an excellent bearer. Every orchardist acknowledges the superiority of the old Bess Pool Apple, the uncertainty of its crop being its only fault. In Pearson's Improved Bess Pool, this defect is removed, and the list of our culinary Apples has received a desirable addition. Not content to confine his labours to the orchard, he and his contemporary, the late much-esteemed Thomas Rivers, tried to remove the prejudice which existed aginst hardy fruit culture under glass. In this variable climate we too often see

> The seasons alter: hoary-headed frosts
> Fall in the fresh lap of the crimson Rose,

and one night blast all our hopes of a fruit crop. Mr. Pearson devoted much study and attention to finding out the method of constructing orchard-houses, as well as to growing hardy fruits under protection, and we know that in both directions he was eminently successful. He acted upon the principle (which may well be followed) that only the best varieties of each kind of fruit are worth the expense and trouble of this mode of treatment. In the large additions which he made to his glasshouses, he adopted an economical and improved construction, and in 1865 published a valuable treatise upon the building and arrangement of orchard houses. This book, "Pearson on the Orchard-house," contains many practical hints which I have found most useful. Mr. Pearson gave great attention to improving the constitution of the Vine. Mildew and red spider (the great pests of the Vine grower) have tried the patience of many gardeners; the causes of their appearance have furnished themes for every writer on the subject of the Vine, and the fertile imagination of quacks has been employed in devising nostrums for their cure; but careful and attentive cultivation, encouraging a free and healthy growth, is the best antidote which I know of. When a member of the Fruit Committee of the Horticultural Society, he ascertained that the native Grapes of North America enjoy a comparative immunity from the attacks of mildew and red spider, and he resolved to cross one of them (the Strawberry or Fox Grape of the Americans) with one of our best hothouse varieties; obtaining a few eyes from Mr. Barron, he soon fruited this variety, and resolved, in all cases, to use it as the female parent. This experiment excited much interest, especially from the extraordinary character of the foliage produced. The Strawberry Grape has small, woolly leaves, very slightly cut, indeed, nearly heart-shaped: the leaves of the seedlings were all deeply cut, some of them small, but others of immense size; indeed, so much so as to be quite curiosities. The fruit varied as much as the foliage, being of all colours and of every degree of unpleasant flavour, excepting one or two which were golden in colour and very sweet. One only was thought worth keeping—Ferdinand Lesseps. It was exhibited in London in 1870, and received a first class certificate. This Vine is a strong grower, and an abundant bearer: the fruit is of medium size, of golden colour, with a very rich and peculiar flavour, composed of a mixture of Muscat and Strawberry. Its peculiarity is its chief recommendation, the aromatic flavour being too strong for most tastes. Mr. Pearson then crossed this Grape with other varieties, and from the batch of seedlings he raised Dr. Hogg, Mrs. Pearson, Abraham Bass, and others. From a distinct cross with the Black Alicante he produced the seedling called Golden Queen, the subject of this notice, and of the coloured plate. The bunch is about 11 in. long, and 6 in. or 7 in. across, with a stout stalk: the berry stalks are rather long, but stout and warted: the berries are from 1 to 1½ inches long; they are oblong and oval. In bunch and berry this Grape resembles the Madresfield Court, but in colour it is a bright gold. The flavour is that of Muscat of Alexandria, without the aroma peculiar to Muscats, being, in fact, a rich, fleshy, sweet Grape. The prevailing taste of the age for delicacy and softness in clarets and other wines, renders a fruit of a negative and refreshing character, without any distinct or pronounced flavour or smell, particularly acceptable. The foliage of this Vine shows its hybrid origin, being strong and dark-looking, having a leathery feeling to the touch more like that of a Fig than that of a Vine. The wood is of a bright cinnamon colour, and, taking fruit and foliage together, it is, perhaps, one of the most beautiful Vines in cultivation. The robust leaves and vigorous habit attest the goodness of its constitution, and I am informed that when grown in houses with other sorts, it is found to be nearly proof against mildew and red spider: when the Vines near it have been attacked, not a leaf of the Golden Queen has been touched. It received a first-class certificate from the Royal Horticultural Society, in 1873. It may particularly be termed an amateur's Grape, being so distinct in foliage and fruit, easy of cultivation, a free setter, with large and even berries. It is a late Grape and keeps fairly well. Possessing these excellent qualities, "Her Golden Majesty" may well be thought worthy of her producer. She adds another tribute to the memory of an eminent horticulturist—a genial neighbour and friend. Many new sorts of Grapes have of late years been brought before the notice of gardeners, but of these the greater part succeed only when treated in an exceptional manner. When they are planted in houses with other varieties failure and disappointment are the only results. It is of great importance that new kinds of fruits, when recommended by the certificate of the Royal Horticultural Society, should not be tested solely by the beautiful appearance of bunch or berry, or by their exquisite flavour; some guarantee should be given to the public that the new comer is likely to flourish under general, instead of exceptional, cultivation. Mr. Pearson's Sons (who have succeeded him in his business) have offered an annual prize for the finest bunches of the Golden Queen exhibited at the London shows. They thus testify their belief in the excellence of the Vine, and I hope that as it is now so generally known among the leading growers, there will be a spirited competition. The Brothers Pearson are men of energy, and fully alive to the requirements of the present day. We can only hope they will carry on the work their father has begun, and prove themselves no unworthy inheritors of his fame. There are lands still unconquered, and harvests yet unreaped awaiting the hand of the horticulturist. When I look back on the last 20 years, I cannot be unmindful of the great progress which has been made in this science; but I believe



Pearson's Golden Queen; berries natural size.

the art to be yet in its childhood. Happy are those who shall behold the glories of its prime! The diffusion of education, the improvement in the public taste in this country (in a great measure due to increase intercourse with other nations), the acknowledged necessity for more general culture, and last, but not least, the higher tone which has for some time prevailed in that branch of literature specially devoted to horticultural matters—all these seem to point to a brilliant future.

Hillside, Newark-on-Trent. W. Newton.

Grape Growing at Oak Hill.—In the review of "Thompson's Gardener's Assistant" (see p. 576), the reviewer says, in reference to Grape-growing, that it is perfectly well known that no gardener, at the present day, cares a farthing for the practice at Oak Hill some thirty or forty years ago. Now, I can go back to fifty years ago to the practice at Oak Hill, and maintain that there were as good black Hamburgh and Muscat Grapes grown there in the late Mr. Dowding's time as we see now grown by the best cultivators. I never saw the Grapes grown there by Mr. Davis, who succeeded Mr. Dowding, but I believe they were about the best, and brought the highest prices, when sold, in Covent Garden market. There were no Gros Colman, Barbarossa, nor Trebbiano grown at the time to which I refer. Nor were any of the monster bunches produced as have cropped up during the last few seasons. The black Hamburgh, however, then produced bunches, at Oak Hill, from 6 to 8 lbs. in weight, with berries as large as Rivers' Early Prolific Plum and as black, and Muscats from 4 to 5 lbs., of fine shape, with amber-coloured berries. What do we see now in these monster bunches but unthinned berries badly coloured, to produce which the crop has to be sacrificed? There never was a greater fallacy in Grape-growing than in trying to produce large bunches, even for purposes of exhibition (unless for weight), for compact bunches, of good size, always show best if the berries are of fair size and well coloured. From extra large bunches of Grosse Guillaume, Trebbiano, and others, I generally clip off some of the shoulders, so as to have them compact to show well on the dessert table.—William Tillery, *Welbeck.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Apricot Branches Dying.—I have always attributed the sudden death of Apricot branches to sunstroke, having noticed cases to occur on due south aspects more frequently than on others, and in many instances where the knife has been too freely used during the spring pruning, the mischief in some cases having taken place during the previous autumn.—W. E.

Early Melons.—In answer to W. R. (see p. 530), permit me to say that for early work I find nothing equal to Gilbert's Victory of Bath. It has a good constitution, is a free setter, medium in size, and excellent in flavour. I have gathered three good crops in one season from the same plants grown in pots, plunged in a bark bed amongst Pines, trained over the centre pathway, and kept well supplied the whole time with weak liquid manure.—James Smith, *Waterdale.*

Effect of Mistletoe on Apple Trees.—Is Miseletoe really as injurious as the article on "Field Culture of Hardy Fruit Trees" states it to be (p. 549)? I have being doing my best to encourage it upon my Apple trees, under the impression that it is harmless. Can any of your readers also inform me whether Mistletoe is ever found upon Firs trees in England? I saw this summer in Switzerland, at the entrance of the Vald' Anniviers, Rhone Valley, probably as many as one hundred Fir trees clothed with it from top to bottom —E. W. Evenley. [There is little reason to doubt that the Mistletoe is injurious to Apple trees, from the fact that the limbs or branches on which it may be seen growing are generally much weakened and diminished in size compared with those on which there is no Mistletoe. When a tree is heavily laden with large, dense bushes of Mistletoe, in addition to having its juices extracted, it is deprived, in a great measure, of light and air. It may, therefore, safely be said that Mistletoe not only impairs the health of Apple trees but diminishes the fruit crop as well. But why encourage its growth on valauble fruit trees when it may be grown on so many different varieties of other trees? The following is a list of those on which it has been found to grow in this country, the first five or six being those on which it is most commonly found, viz.:—The Apple, Hawthorn, Lime, Poplar, Maple, Willow, Mountain Ash, White Beam, Acacia, Horse Chestnut, Birch, Mespilus, Plum, Pear, Almond, and Oak. I have never seen it on Fir trees in this country.—George Berry.]

Hertfordshire Dwarf Cauliflower.—We are now cutting good heads of this fine summer and autumn Cauliflower from open quarters. The plants, indeed, are heading so fast that, besides obtaining a full daily supply from them, I have been able to store 300 fine heads in frames for late use.—Richard Nisbet, *Aswarby Park.*

THE KITCHEN GARDEN.

FORCING POTATOES.

All things considered, the old Ashleaf Potato, if true, is still as good as any for forcing. Select good-sized, whole tubers, and place them, crown upwards, in shallow boxes or trays, and then cover with a layer of Moss or Cocoa-nut fibre refuse. The boxes should be placed in some light, airy position, where there is just a little warmth; under a greenhouse stage will do, as there is not much gained by pushing Potatoes hastily and prematurely into growth. If there be a Peach-house at work, a few may be started in pots at once; but as soon as the growth shows above the soil, they must occupy a light position as near the glass as possible. A Vinery will hardly do so well, as too much heat and shade will draw them up weakly, and the size and quality of the produce depend upon the growth being strong and vigorous. Three sets of tubers may be planted in each 12-in. pot, which should be well drained, as stagnant moisture about them spoils their flavour. Place one large crock over the hole at the bottom, and on this place 3 in. of rough pieces of turfy soil; the water will pass through this freely, and the plants later on will derive some advantage from it. On this put 5 in. or 4 in. of light, rich compost, consisting of loam and leaf-mould, with a sprinkling of wood ashes. In preparing the sets, one good strong eye or bud for an early crop is better than more, and all but the strongest one should be rubbed or cut out. Cover with 2 in. or 3 in. of soil, which will leave space for an earthing up when the stems have grown 5 in. or 6 in. high. Potatoes grown in this way will furnish a few early dishes; but the main forced crop will be better grown on beds of leaves and stable manure in pits or frames. The leaves and manure should be well prepared, as it is a regular steady heat that is required. The early beds may be composed of equal parts leaves and manure; later in the season more leaves may be employed, if in a situation where they are plentiful. Of course, where leaves are used to the extent of one-half or more, there will not be much danger from overheating; but even then no time will be lost by throwing them and what manure is available into a heap to ferment. This brings up the heat quickly, and the turning and mixing that follow in making up the bed sweetens the whole, and the bed will be in a fit condition to receive the plants sooner than if no such trouble had been taken.

If pits be used for forcing the first crop, fill up with the fermenting material to within 15 in. of the glass, treading it several times during the operation. Unless treading be resorted to, it should be filled to the top of the walls, as it will subside considerably when the soil is placed on it; such settlement will take place in proportion to the depth of material, which will be sure to go down sufficiently to afford room for the Potato tops by the time they require space. There is only one danger to be apprehended from having Potatoes near the glass, and that is frost on cold nights, and this will have to be guarded against by using warm coverings. About 1 ft. in depth of light, rich, good peat soil will be sufficient, and the Potatoes should be planted in rows about 14 in. apart and 8 in. between the sets in the rows. If planted 6 in. deep they will not require earthing up in the ordinary sense of the term, but a little warm, fresh soil placed round the stems with the hands when about 6 in. high will be beneficial. When Potatoes are grown on a moist bed of fermenting materials they will not require much water beyond what ascends in the form of vapour carried up by the heat of the bed during the early growth. Treatment somewhat similar to this will be required when Potatoes are forced in movable frames and lights, and the early crops should have both deeper and wider beds than will be necessary later in the season. As the days increase in length and warmth, temporary beds may be made up anywhere, and be sheltered with straw covers. I always begin digging from the open air by the middle of May, merely planting on a warm, raised border, and covering every night with straw-covered frames. E. Hobday.

The Price of Turnips.—Not long ago a correspondent, complaining of the price of Turnips in London, recommended growers to send their crops to market instead of feeding them off with sheep.

At that time Turnips were, in this locality, esteemed a glut, and growers complained that barely 1s. per dozen bunches was obtainable. The crop of Turnips this year has been a remarkable one, and they ought to be sold very cheap indeed; but it is a fact that even now, although the present market price to the grower has advanced to about 1s. 6d. per dozen bunches, yet single bunches are retailed at 4d. each or 4s. per dozen. The reason for this almost prohibitable price to the consumer is obvious; there are too many middle men in the vegetable trade, each of whom expects to make 50 per cent. profit, whilst the unfortunate grower, who has borne all the burden of cost and labour in producing the crop, gets but a poor return. If producers and consumers could be brought into immediate contact, both would be greatly benefited.—A. D.

KITCHEN GARDENING MADE EASY.

My starting point, this week, is with that king of vegetables, the Potato, and here I must halt for a moment to say we gardeners, as a rule, grow about ten times too many varieties. Taking Myatt's Prolific, all in all, I pronounce it to be the Prince of Potatoes, and for garden culture, with the exception of an early south border of old Ashtops, as they come a few days earlier, I will grow nothing else for the future. They come off early, and, if taken up in time, are free from disease, and a good crop of Potatoes, without disease, is worth a king's ransom. The land for the first crop in this case is dug and slightly manured, and laid up roughly for the winter frosts to pulverise. The sets are planted out before the first week in April by drawing shallow drills, from 2 in. to 3 in. deep. All my seed is laid thinly in shelves, on an airy room, and by April will be sprouted and bristling with good strong shoots, green and hardy. Putting them into the warm soil, they come up at once and receive no check, as we earth them up twice before the middle of May in order to guard against frosts. When the crop is lifted, we cultivate the land, but not deeply, and plant, in this case with a dibber, Coleworts, Winter Lettuces—that is Lettuce for using all winter; and Endive—which is now, December 15, all protected with Bracken. All being off the ground by February, the land is well dusted with lime and malt dust in equal quantities, and again cultivated, keeping this dressing near the surface. In the first week in April we plant Myatt's Prolific, thus growing two crops of Potatoes and one of Lettuces without the use of the spade or steel digging-fork—and here, I may add, that I have, for days, aye for years, worked these forks, and, for digging, where the land is not manured, or, in the case of stony or flinty land, they are useful garden implements, but for easy work give me the cultivator.

Burghley. R. Gilbert.

—— I am highly pleased that men like Mr. Groom should not only read, but also criticise, my "Kitchen Garden" notes, and I feel sure that the difference between Mr. Groom and myself only wants explaining, and then we shall go hand in hand. Mr. Groom says (see p. 579):—"Surely I do not plant early Potatoes after Brussels Sprouts without digging?" but I do, and with the best results. Surely Mr. Groom does not allow his man to walk over the whole bed for a dish of Sprouts? My man begins at one end of the bed and clears off every button before him, so that we have no pathways. I mulch the land, as before mentioned, and consequently have no weeds; the mulching keeps the soil moist and forms the best of roads, being clean and tidy. We then, as mentioned in my former notes, use the cultivator, mixing the manure with the top soil, from 5 in. to 6 in. deep. With respect to this being easy work, my men shall speak for themselves. Four years ago they presented me with a timepiece, and my foreman was deputed to make the presentation. After thanking them for this token of respect, I asked them what I had done to merit such a present, when one old man, of forty-eight years' experience, answered:—"You have made kitchen gardening easy compared with what it used to be, by using them cultivators." I can use the spade a little, but I much prefer the cultivator, and so do the whole of my men; in fact, in all soils twice the ground may be got over with it that could be got over with the spade.—R. Gilbert, *Burghley.*

Results of Deep Cultivation.—Mr. Gilbert's method of cultivation must be good, or he could not produce the excellent vegetables which he does. But, in order to prove that deep cultivation, although expensive, is not "hurtful," allow me to make the following statement:—As a rule, we trench our ground every year two spades deep, and turn over the third spade in the bottom of the trench, which gives us a good working soil rather more than 2 ft. deep. On a piece of ground trenched in this manner last winter we have Parsnips (The Student), one root of which measures 17½ in. in circumference at the top, and at 12 in. from the top it girths 6¾ in., the length of the whole root being 27 in.; others are more in circumference, but not so long. I may add that one root was 36 in. in length, but being forked, it was not so handsome as the others. Onions (James' Keeping) on the same square of ground, produced bulbs 13 in. in circumference, the weight of one of which was 15 ozs.; the average size of bulbs, taking the whole crop into account, is 10 in. Leeks (Ayton Castle) measure 6 in. and 6½ in. in circumference. These measurements have doubtless been exceeded elsewhere, but in such a year as this has been, they will, I trust, be considered creditable. It will be seen that I am an advocate for deep annual cultivation.—J. W. Bayne, *Kingston, Derby.*

Dandelion Salad.—Allow me to inform "W. T. T." that I really do mean that the Dandelion may be gathered from November to March in the open fields, and that when it is dressed in the manner described (see p. 529) it forms a very palatable salad. Although it is occasionally blanched, its flavour is not improved thereby, but the contrary. I may further add that it is during the period mentioned that the Dandelion is found in its most tender condition; it is seldom used during the time when it is in flower, and is, in fact, hard and unpalatable when it grows most vigorously; moreover, in summer it contains such an amount of milky juice that it is far too bitter for the palate. Respecting the mixing, I may inform your correspondent that a salad to be really good should be mixed and eaten immediately; under no consideration should it be allowed to stand. The reasons why I prefer mixing the pepper and salt with vinegar is because I have always found that the best plan to distribute them equally throughout the salad, which the viscous character of the oil otherwise sometimes prevents, especially if very great care be not exercised in the mixing.—Charles Dennis, *Southwark Park.*

—— If we may take the season when Dandelions are most sought after as indicating the best period at which to gather them for salad, it is from March to June, when they are making active growth. Although when grown and blanched artificially they may doubtless be had in good condition at all seasons, yet, like Lettuces and other salads, I have no doubt that, under ordinary conditions, they are best while making their first growth previous to becoming exhausted by flowering, or through the heat and drought of summer. On fine spring days foreigners hereabouts, with table knife and basket in hand, go out and root up vast numbers of this well-known plant from Grass plots and Grassy banks, somewhat to the astonishment of the rural population, who are certainly strongly imbued with the national prejudice against the use of Dandelion as food in any shape.—James Groom, *Henham.*

Christmas Vegetables.—Garden vegetables should be plentiful this year, Potatoes not excepted, but these can only be had at an enhanced price. Turnips are very abundant, and so far the weather has kept the late crops growing, and the earlier ones comparatively uninjured. Early Broccoli is not abundant, but when the new winter protecting kind becomes better known, market growers will find it valuable at this season of the year. The Walcheren plantings are mostly cleared off, but in some favoured localities good heads are yet obtainable. One of the most favourite Christmas vegetables is the Brussels Sprouts, and these are still being produced in abundance. Savoy Cabbages want frost to make them tender, but early ones are good and inviting, whilst the tender and marrow-like Collards are just now at their best, and they are unusually abundant. More autumn-grown Onions are seen this year than at any previous time, and full large for pulling. Spinach is largely sown and affords through the open weather many good pickings. Carrots and Parsnips are not so popular for common consumption, and are therefore not largely grown in some gardens, but are chiefly produced in favoured localities. Carrots, especially, are found in some parts of Surrey. Of choicer kinds the high class producer and the importer will do their part in securing a good supply, and only in the improbable event of very severe weather at Christmas can vegetables be scarce.—A. D.

Adulterated Seeds.—At a recent meeting of the Royal Agricultural Society, a Report from its Consulting Botanist (Mr. Carruthers) was read. It stated that during the past year some sixty samples of seeds had been submitted for examination, most of which were satisfactory, no case having occurred this year in which either killed or spurious seeds had been foisted upon the purchaser. The samples that he had condemned were defective either through the presence of worthless or injurious weeds, or through bad or careless harvesting, so that too large a proportion of unripe grains were collected, or the grains were injured in thrashing or in other subsequent treatment. It was recommended that the Society should have power to take the same course as the Chemical Committee had taken for some years, with a very beneficial deterrent effect upon people who were disposed to act dishonestly, *i.e.*, to present quarterly reports on the cases of adulterated, killed, coloured, and inferior seeds brought under the notice of the consulting botanist, for publication, together with the names of the vendors (subject to the approval of the Council) in the newspapers.

EFFECTS OF RECENT SUNLESS SUMMERS.*

Before the close of the year I think it desirable that a few remarks should be made regarding the deficiency of certain fruits, flowers, and vegetables, for comparison with those of future seasons. A considerable portion of the summer of 1876 was comparatively sunless and moist, so much so, that the bearing branches of many fruit trees and flowering shrubs were not sufficiently ripened to mature healthy flowers or fruit, and, therefore, a deficiency in the crop of 1877 has been the result, although the winter of 1876-77 was rather mild. This season, like the previous one, has also been sunless and moist, and therefore many vegetable productions have never been properly matured. At the present time, as far as can be ascertained, the flowering shoots of many shrubs and fruit trees do not appear sufficiently strong to warrant us to expect a full crop another year, two good consecutive seasons being generally necessary for this purpose. The mild weather which we have lately experienced is causing many fruit trees, particularly Pears, to produce late blossoms, which also militates against next year's expectations. In cases where fruit-bearing wood has been ripened by a previous fine summer, it sometimes happens that the fruit blossoms are ruined by late spring frosts. A slight touch of frost occasionally during the spring months is sometimes, however, desirable, for if all the blossoms produced were to come to maturity, the trees would often run a risk of being injured by an excess of small-sized fruit. In a season like that of 1876 the wood formed during the year was not thoroughly ripened, and when the flower-buds of many fruit trees opened in 1877 they were, in general, weak, and frequently colourless, particularly pink kinds, and, in numerous instances, fell off without fruit being formed. In cases in which fruit was produced, a deficiency in flavour was generally remarked; this deficiency in flavour was particularly noticeable in many of the finer wall and standard open-air fruits, such as Peaches, Nectarines, Apricots, Plums, and Cherries, as well as in Apples and Pears, and also in many of the smaller fruits, such as Gooseberries, Strawberries, and Raspberries. Although some kinds of Apples fruited freely, and some were tolerably well perfected, the majority were miserably small and unripe, and many are still seen hanging on the leafless trees. Deficiency in the way of fruit was also observed in the case of such trees as the Crab Apple, common Gean, standard Plum, Black Sloe, Medlar, Strawberry tree (Arbutus Unedo), common Black Elder, Bramble, Barberry, Mahonia (particularly M. aquifolia), Gaultheria Shallon, Ribes sanguineum, Portugal Laurel, and Laurustinus. Amongst hardy ornamental trees and shrubs noticed as being freely covered with fruit, were the varieties of the Service or White Beam trees (Sorbus domestica), also the Mountain Ash, Cotoneaster, Thorn, Yew, Snowberry, and almost all the varieties of Holly. Although the Holly was rarely to be seen in fruit last year, this dearth was evidently caused by frost, 167° having been registered during the months of March and April, 1876, at a time when the blossoms of the Holly were approaching perfection. This spring the Holly was later in blooming, and thus escaped certain spring frosts, and a profuse crop of fruit is the result.

Of the smaller description of hard fruits, Filberts and common Hazel Nuts were also scarce. The Hazels were abundantly covered with catkins during the month of January, but the severe frosts which occurred towards the end of that month, and beginning of February, completely destroyed them while in perfection, turning them from a rich yellow to brown. Fruit was likewise scarce amongst ornamental fruit bearing and forest trees. In this part of the country Walnuts have been excessively small, and none ripened. The Horse Chestnut Trees have been fruitless this year, and the leaves were much infested with insects during the spring; the flowers, too, got injured, and few opened. Eatable sweet, or Spanish Chestnuts have also been scarce. A great scarcity has likewise been noticeable in the seeding of the Norway Maple, Elm, Oak, Birch, Lime, and Beech. The Norway Maple and Elm were freely covered with flowers during the early part of April. Throughout that month we experienced collectively 50° of frost, which injured the flowers of these trees, and probably those of many others which flowered about the same time. In many districts the Beech has been covered with masts but almost all have been found empty. This scarcity, as well as other instances recorded, arises, in a great measure, from the unnatural state of the young shoots, which, although sufficiently strong to produce flowers, were not strong enough to resist frosts, which they are capable of doing when thoroughly ripened by a previous fine summer. On some of the varieties of Fraxinus, ash keys have been produced in abundance, but the great majority of the trees have been fruitless, while with the Plain or Mock Sycamore trees, the samara has, in some cases been plentiful, though generally wanting, even on trees, which usually fruit in abundance. In many situations the young growths of the Sycamore and other trees have been observed to be excessively short and twiggy, when compared with the growths of previous years, while conifers have made luxuriant growth. Laburnum flowered well during the spring months, and are now covered with seeds. Although cones of Abies Douglasi are in many places plentiful, few of them contain perfect seeds. Seeds have also been scarce in the case of many annual and perennial herbaceous plants, a circumstance, however, greatly owing to the excessive moisture at the time when they where in bloom. We annually collect seeds from our own Sweet Peas and Mignonette, but this year, not one pod ripened, on the former, nor a seed on the latter. Many perennial habaceous plants have also been late in coming into bloom, and, as a rule, far from strong. Dahlias, Holyhocks, and Gladioli have been sparingly exhibited this year, and the same may be said of Roses and other florist flowers. Almost all plants bedded out have been more or less failures, such as Scarlet Pelargoniums, Verbenas, Calceolarias, &c. Tritomas, particularly T. Uvaria, were hardly seen in flower this year before the middle of October, and the Pampas Grass (Gynerium argenteum) not till the middle of November, and then only in favoured situations.

Many vegetables have also been deficient. Potatoes in many districts are scarce and inferior in quality; as well as Jerusalem Artichokes. Beetroot, Carrots, and Parsnips are generally small, although good in quality. Many varieties of Peas, French Beans, and Scarlet Runners have been quite a failure this year, as well as Cauliflowers, Cucumbers, and Vegetable Marrows. The stems of the latter in many cases became diseased, and little or no fruit was produced. Many other examples might be quoted; the foregoing, however, are sufficient as a record of the year 1877 in the neighbourhood of Edinburgh. In many parts of England the scarcity of several of the above articles is also complained of, although exceptions are to be found in some places both in England and Scotland. Judging from present appearance, we are likely to experience the same difficulty as last year in forcing many of the hardy shrubs, &c., into flower, in consequence of the unnatural state of the wood and flower buds, the result of the recent sunless summer.

This autumn has likewise been remarkable for the want of the usual autumnal tints on the leaves of the various forest and ornamental trees. During those seasons when the wood and leaf shoots have been thoroughly ripened, the autumnal tints are then very beautiful, in reds, rich yellows, and browns, while this year, with the exception of the Medlar and Sorbus vestita, which are now yellow, also certain Azaleas and Ampelopsis tricuspidata (the latter on a wall), most other kinds have died a dingy, olive-green colour, and in many instances the leaves were blown off in consequence of the severe gales to which they have been exposed. The Liquidamber (Liquidamber styraciflua) is generally one of the latest trees to part with its leaves, and then always of a dark red colour. They are still hanging flaccid on the trees (13th December), of a greenish colour, showing the unripe state of the wood.

Greenhouse Stands.—Will any reader of The Garden kindly assist me with their advice as to the fitting up of a conservatory with shelves and stands? It is 24 ft. square, opening from a sitting-room, and has a low span-roof. As it is built over a room, all the plants must be in pots. The floor is made of cement. I am recommended to have either two or three stands down the centre, and sloping shelves round; but before fitting it up I am anxious for further advice.—A. J.

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* Read by Mr. James M'Nab before the Botanical Society of Edinburgh, Dec. 13, 1877.

FLORAL DESIGNS FOR THE TABLE.*

Under this title a new work on table decoration has made its appearance. It is from the pen of Mr. Perkins, gardener to Lord Henniker, who, if he has himself arranged tables similar to those illustrated in his book, must indeed be a skilled decorator. Mr. Perkins's work contains twenty-four coloured illustrations, amongst which may be enumerated those of a dinner-table, breakfast-table, luncheon-table, wedding breakfast-table, cricket luncheon-table, harvest home dinner or supper-table, hunt breakfast-table, and the Christmas dinner-table. Mr. Perkins advocates the arranging of flowers simply on the table-cloth in place of in glass or zinc troughs, which are mostly employed for that purpose; indeed, most of the illustrations are examples of this style of decoration. There are designs for small tables as well as large ones, as the following extract from the introduction to the work will testify:—"In this book-making age," says Mr. Perkins, "writers generally give some reasons for their publications. I have two: one is, I think every man should contribute his mite for the benefit of his fellows; the other is, that I think a work on this subject, showing at a glance how a dinner-table for from eight up to one hundred persons should be decorated, will be welcomed not only by those who are called upon to embellish the tables of the upper classes of society, but also by that important and numerous class who are in the habit of giving entertainments which aim to be distinguished by their simplicity and elegance rather than mere costliness." That Mr. Perkins also gives some hints on the cleansing and preserving of foliage for a second day's use, will be seen from the following extract:—"I may mention that in large establishments about five designs will be required for each week, and it will of course be advisable to have them as different in character as possible each night. The materials for the one decided upon may often be gathered two or three hours before wanted, and well damped with clean water (flowers excepted). Fern fronds, Lycopodiums, and such things, are best immersed in water for a few minutes to cleanse them from all grit, &c., and Vine leaves will often require sponging; when all are ready, they should be placed carefully in a flat basket or box, and be put in a cool place until wanted." "As each design will speak for itself, and a brief description is given of the materials employed, it will only be necessary to state that after the company has left the dining-room the groom of the chambers or the under butler should place any Fern fronds, leaves, or anything else worth preserving, into water, whereby many useful pieces may be saved, and be made available for other purposes the following day." Mr. Perkins's book will be found to contain many novel designs well worth inspection, but it may be as well to add that the designs are mostly formal, and may be termed a kind of dinner-table bedding out.

A. H.

Select Bedding Plants.—The following are desirable plants in their respective classes:—*Coleus*: Chameleon, Pine Apple Beauty, M. Crousse, J. M'Indoe, Multicolor, M. Denis Guerin. *Fuchsias*: Lord Falmouth, T. T. Lawden, White Souvenir de Chiswick, Fireworks, Dr. Kitto Giddings, Mrs. Mein. *Lantanas*: Favorita, Victoire, Distinction, Marquis De St. Laporta, Grandiflora, Princess Louise. *Chrysanthemums (Pompone)*: Marooon Model, Model of Perfection, Adonis, President, Madame Marthe, Saint Michael, James Forsyth, Golden Trevenna, Souvenir de Jersey, St. Thais, Rose Travenna, Mrs. Dix. *Pelargoniums (Zonal)*: Kloon, scarlet; Astarte, crimson. Lady Eva Campbell, Mrs. Wright, pink; Lizzie Brooks, salmon scarlet; Fairest of the Fair, white, pink centre. *Pelargoniums (Nosegay)*: Dr. Rawson, crimson; Louis, magenta; Mrs. Lancaster, red pink; Apple Blossom, white; Mrs. Vickers, deep salmon; John Gibbons, scarlet. *Pelargoniums (Tricolor)*: Golden Maria Stuart, John Downie, Miss Goring, H. Reynard, Peter Grieve, Prince of Wales Silver, Mrs. Laing, Dolly Varden, Lady D. Neville, Mrs. M. Masters; Miss Farring, Eva Fish. *Bronze Pelargoniums*: Emperor of Russia, J. Kirkham, Prince Arthur, Mrs. H. Ware, Princess of Wales, Princess of Prussia. *Gold and Silver Edged Pelargoniums*: Princess of Alexandra, Miss Kingsbury, Rosamond Wright, Rhodanthe, Golden Brilliantissimum, Golden Chain.—H. C.

Winter Flowering Pelargoniums.—Pelargoniums are evidently destined to become as universally grown for the decoration of our conservatories and other glass houses during the dullest months of the year, as for the embellishment of our gardens in summer. Of few plants, too, could it be more appropriately said, that it is everybody's flower, for it is found in the palace and in the cottage, and even deigns to brighten, with its brilliant blossoms, windows where sun and air and other life-giving elements are at the best but fitful visitors. The readiness with which it may be propagated from cuttings is familiar to us all, and poor, indeed, must be its after culture if it disappoints its owner. At the present time we have a brilliant display of Pelargoniums of all shades, from pure white to the most brilliant scarlet, the soft pinks and whites being exceptionally attractive. But what I particularly wish to call attention to is this; that although the latest additions to this popular flower are vast improvements as regards size of truss, form of flower, and strength and dwarfness of habit and foot-stalk, no one need be deterred from having a similar display because their varieties are old, as our old Vesuvius, Rose Rendatler, Madame Vaucher, Amelia Grisan, &c., are not excelled for quantity of bloom by any new varieties which I have yet tried. The principal points as regards treatment, consist in keeping all blooms pinched off during the summer time, and in having the pots well filled with roots. For winter quarters, a light well-ventilated structure, where sufficient fire-heat to ensure a dry, buoyant atmosphere can be readily applied, will favour the retention of the blossoms in good condition for a considerable length of time. Sufficient root moisture must be supplied to support a healthy development, and all decaying leaves and flowers should be regularly removed.—James Groom, *Henham*.

Coverings for Cold Pits.—In answer to "W. B. L." (see p. 580), I should recommend him to get some common straw mats, made with wheaten straw and tar twine. When well made, such mats keep out the rain, form a good protection from frost, and will last eight or nine years. They are made as follows:—First, be provided with a wooden frame of $1\frac{1}{4}$-in. material, of any size to fit the frame or pit, say 8 ft. long and 6 ft. wide, a size which would fit an ordinary double light pit; then get some strong tar cord and stretch pieces of it, about 1 ft. apart, tightly from end to end of the frame. Next, take the straw in straight rolls, rather thicker than a man's wrist, and lay it crosswise the full width of the frame; then bind it together with smaller tar twine all the way through until the mat is completed; trim the ends with a pair of shears, and the mat is fit for use. Mats made in this way are easily rolled up or spread on the glass.—C. H. Kitching, *Cokethorpe Park, near Witney.*

QUESTIONS AND ANSWERS.

Exposing Roots of Lily of the Valley to Frost.—Will some of your readers tell me if it is necessary to dig up the roots of Lily of the Valley, and expose them to the action of frost before putting them into force? This practice is followed here with them, and also with other plants, such as Roses, Lilacs, &c.—Preston Powers, *Florence.*

Goodyera Rollissoni.—Allow me to apologize to Messrs. Rollisson for my note on Goodyera. I have certainly been labouring under a great mistake. I have to day seen a plant of G. Veitchi from the Continent, also one sent to me as G. Veitchi, and the distinction is certainly great. G. Rollissoni is much the better of the two.—J. Speed.

Plaster of Paris and the Phylloxera.—Has any one tried old lumps of plaster of Paris, ground to powder, dug in among the roots of Vines as a cure for Phylloxera? We have none of this pest here to try it on, or I should make the attempt.—Preston Powers, *Florence.*

Sowing the Corsican Pine and Alder (see p. 580).—Keep the Pine seeds in a dry airy room until spring. Pinus seeds are generally sown in the beginning of May. Alder should be sown in March. It is not necessary to sow them in pans or boxes, but if the quantity be very small, this may be done, afterwards placing them in a cold frame. When sown in the open ground, the soil should be well dug and worked very fine. The seeds should be lightly covered with sifted soil, and care should be taken not to sow them too thickly.—B.

Hardy Flowers.—I want to get a good book on flowers, with lists of plants and bulbs, and descriptions of the same, saying particularly if they are hardy or half-hardy, and whether, if the former, they will do in a very cold country like ours in the north. I see in some lists that Pentstemons are said to be hardy, but they will not stand the winter here. I should like the book more particularly adapted to outdoor gardening, as I have no greenhouse. I should also desire to have hints given as to the cultivation of plants—their colour, height, and time of flowering.—Eustace H. Raven, *Sedburgh, Yorkshire.* ["Hardy Flowers" (published by Macmillan), of which a new edition will very shortly be issued, will answer your purpose.]

Begonia Frœbeli.—In answer to "W. M." (see p. 580) respecting raising this from seed, allow me to say that the seed was sown on the 14th of March, plunged in a hotbed, the temperature of which was about 45°. The soil used consisted of two-thirds leaf soil, loam and sand. The young plants were potted in thumb pots on the 31st of May, still using the same soil, until they were shifted into 6 in. pots, when a heavier soil (half leaf-mould and half loam with sand) was used. March is, however, I think, too early to sow the seed—that is to produce plants for winter blooming. I intend, next year, to make three sowings, the last as late as June. I may add that whilst the plants were growing I continued the same temperature until August, when they were put into a cold house.—John Clews, *Headfort, Kells, Ireland.*

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* "Floral Designs for the Table." By J. Perkins. London: Wyman & Sons, Great Queen Street. 1877.

No. 319.] SATURDAY, DECEMBER 29, 1877. [Vol. XII.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

DESTRUCTION OF TREES IN SOUTHWARK PARK BY THE GOAT MOTH.

In the various notes which have appeared in The Garden respecting the ravages of the caterpillar of the goat-moth, mention of a few trees only is made upon which it feeds. I do not know whether our low-lying position here has anything to do with the matter, but the damage done by the caterpillars of this moth is something astonishing. The following are the names of trees and shrubs, in this park, which I find to be most infested by them, and they are placed in the order in which they are the greatest sufferers, viz., Elms, Thorns, Willows, Beam Trees, Birch, Sycamore, Horse Chestnuts, Lilac, Cornus, flowering Currants, and Guelder Roses. Indeed, I believe its ravages extend even further. The whole of the trees just mentioned, with one exception (the Horse Chestnut), are completely riddled by these caterpillars, and, although planted within the last ten years, I think it will be difficult to find a single living specimen in another two or three years, so rapid has been the destruction. I have not yet found it on the Plane, Poplar, or Lime—the first two being the best trees with which I am acquainted for this neighbourhood. The only method yet tried for destroying the caterpillar is the one recommended in Vol. III of The Garden (see p. 203) by inserting a pointed wire or stick, wherever we find perforations in the bark indicating its presence. The great difficulty appears to be that of finding it when it commences its work of destruction—a matter easy enough when it has eaten out the centre of a young tree, and left behind its perforations, with the sawdust-like deposit usually found at the base of the tree or clinging to it. The caterpillars which we find principally during the summer months are apparently full-grown, when they measure 2½ in. or 3 in., and even more in length. I have placed them in a watering pot with short lengths of various kinds of wood, and in the course of twelve hours I have found their whole length buried in the very centre of the wood. I mention this simply to show what they can do. With regard to spirits of turpentine, or in fact any other spirit, their efficacy must be very limited indeed, as in many instances I find but one perforation and that some distance below the insect, in which case it could not be applied except from below with very little chance of its reaching the caterpillar, or by cutting the tree above, a method which I should not recommend. Where several perforations exist in the case of young trees, the damage done has gone too far for any remedy to be available, except cutting down and burning. It must be borne in mind that my remarks refer exclusively to London, where gardening in every shape is carried on under difficulties not to be met with in the country. I shall, however, give the matter close attention, and I trust that others in London will do the same, with the view of finding out the best means of ridding us of the pest at an early stage of its existence, as, in my opinion, that is the best time to deal with it.

Charles Dennis.

SOME CHRISTMAS FRUITS.

Raisins.

In considering the matter of Christmas fruits, the first that comes to our mind, as yielding essentially a Christmas product, is the Grape Vine, and this not solely on account of its producing Grapes properly so-called, but by reason of its being the source of the tons upon tons of dried fruits commercially known as Raisins and Currants, which form so important an item in the composition of that indispensable adjunct to a Christmas dinner—a plum-pudding. Of the numerous varieties of the Grape Vine at present cultivated in our own hothouses, we have not now to speak; nor are we concerned with the juicy produce of the French and German provinces, Spain, or Portugal. So widely cultivated is the Vine, and so varied are its products, that we must necessarily keep within the limits of our first intention, and speak only of Raisins pure and simple. No plant was better known to the ancients than the Vine, its reputation being founded on the fermented juice of the fruit. But few plants, likewise, are known to attain to a greater age. Though the stems are for the most part slender, the wood, as the plants increase in age, becomes remarkably compact and hard. Some very old Vines are recorded whose trunks are of sufficient diameter from which to cut fairly-sized planks. In the districts, however, whence we draw our supplies of dried fruit in the form of Raisins, Currants, Muscatels, Sultanas, &c., the plants do not attain to any very great size. The different qualities of Raisins known in trade are the produce either of distinct varieties of the plant, of different soils, or of different modes of drying; this last, indeed, is all-important in producing a fine-flavoured, fleshy, and good-looking fruit. In his account of Spain, Laborde thus describes the mode of drying these fruits:—"In the kingdom of Valencia they make a kind of ley with the ashes of Rosemary and Vine branches, to which they add a quart of slaked lime. This ley is heated, and a vessel full of holes containing the Grapes is put into it. When the bunches are in the state desired, they are generally carried to naked rocks, where they are spread on beds of the field Artemisia, and are turned every two or three days till they are dry. In the kingdom of Granada, particularly towards Malaga, they are simply dried in the sun without any preparation. The former have a more pleasing rind, but a less mellow substance; the skins of the latter are not so sugary, but their substance has a much greater relish; therefore the Raisins of Malaga are preferred by foreigners, and are sold at a higher price. To this their quality may likewise contribute, as they are naturally larger and more delicate than those of the kingdom of Valencia." The finest kinds at the present time are, we believe, those that are carefully dried in the sun as they still hang in bunches on the Vines, the stalks being partially cut through so as to interrupt the natural flow of the juices, and the leaves being also removed around the bunches. The Spanish Grape harvest for the preparation of Raisins, commences in August, and during the drying, more particularly of the better kinds of fruit, the bunches are very carefully overhauled, and the small or injured fruits removed. Great care is needed that rain or moisture should not get to them, by which the fruits are often spoiled; and the stalks, instead of being the bright, reddish-brown colour so familiar to us, and always indicative of good fruit, become black or blotchy. When thoroughly dried they are carefully and tightly packed in boxes, varying in size, and are in this way brought into this country. In the neighbourhood of Smyrna large quantities of Grapes are grown entirely for the purpose of drying, the well-known Sultana, a small seedless variety, with a light-coloured fruit, is solely the produce of this neighbourhood. The Vines, which are planted in rows, usually about 6 ft. or 7 ft. apart, commence bearing in the third year, and are considered in perfection at from four to six years old. The gathering of the fruit commences in July, and lasts till about the middle of August, the principal bunches being gathered first, and those from the lateral shoots, which are for the most part smaller, being taken at the close of the harvest. The drying and packing are similar in principle to those already described. Sultanas always realise a higher price in the market than the other kinds of Raisins, and the produce also fluctuates very much. It is estimated that, in the neighbourhood of Smyrna, about 10,000 tons are annually produced. Very large quantities of Raisins have been received from Malaga this season. From August, 1876, to June 30 of the present year, as many as 1,343,000 boxes arrived, against 977,520 up to the same date of the previous year. In the early part of the season, in some districts near Valencia, the Vineyards suffered severely from storms, but the crops, on the whole, appear to have been good. Somewhat similar to the Sultana, in point of its being without seeds, is the Currant, the produce of a distinct variety of Vitis vinifera, known as Corinthiaca, derived, it is said, from Corinth, the place of its original cultivation. At the present time, it is very largely grown in the Greek islands, especially in Patras and Zante, the best quality being produced in Patras, Vostizza, and Corinth. In a well ordered Currant plantation the Vines are usually found in rows, about 6 ft. apart, and sufficiently distant from each other to allow the branches to form a spreading head which is supported by props. What we have said with regard to the gathering and drying of Raisins is generally applicable to the Currant, therefore it is needless to dwell further on that part of the subject. The Currant crop of the Morea, in 1876, was an exceptionally large one reaching

70,000 tons, of which England took 53,556 tons, the United States of America, 6,431, Canada, 906, Trieste, 2,999, north of Europe, 441, Russia, 659, Marseilles, 32, while 4,926 tons were held for shipment to England and America. It seems from the report from whence the above figures are gathered that the consumption of Currants is steadily increasing all over the world.

Oranges and Lemons.

Next in importance to Raisins and Currants, whether considered commercially, or on account of their productiveness, is the Orange and Lemon. Of the varieties of these fruits we have so recently spoken in the number of The Garden for November 3 (see p. 421), that a few words on their prolific character as fruit bearers will now suffice. We read of single Orange trees producing in one season as many as 20,000 fruits, the annual exportation from St. Michaels amounting, it is said, to 200 shiploads, or nearly 200,000 boxes. It needs some such large quantity to be brought, and that not from one port only, to supply the great demand there is for this favourite fruit, for the Orange is universally relished; it finds its way amongst more costly dessert fruits to the tables of the aristocracy, and from the costermonger's barrow to the gallery of the cheap theatre; nor can the popularity of the Orange be wondered at when the fruits—we say nothing as to quality—can be purchased at the marvellously cheap rate of thirty-two for 1s., a price we saw them marked at not many days since. In trade returns Oranges and Lemons are always classed together, and the quantities imported are recorded in bushels, 2,995,323 bushels having been imported in the year 1876.

Dates.

We shall not attempt to exhaust the list of Christmas fruits, so numerous and varied are they; of their extent, however, a good notion may be had by a visit to Covent Garden Market at this season of the year. But we cannot dismiss this subject without a few words on two all-important fruits, which, though more plentifully seen in our shops just now, are to be obtained at all seasons of the year. We allude to Dates and Figs. Of the former, the produce of the well-known Palm, Phœnix dactylifera, immense quantities are regularly consumed as an article of food over the wide range of country in which the Palm is cultivated. It grows to a height of from 60 ft. to 80 ft., and is very generally found through Northern Africa, Western Asia, and some parts of Europe. The trees live to a great age, and produce their fruits abundantly up to 200 years or more. Like our own cultivated fruits, the Date is known in an infinite number of varieties, valuable according to its quality, size, or appearance. Of late years, some remarkably fine and fleshy Dates have appeared in the English markets, the best quality being known as Tafilat Dates. They are very wholesome, and have become much more in favour in this country during the past few years than formerly. In some parts of Africa the natives make a solid black cake by pounding and kneading the Dates, and finally pressing the mass into the form of blocks. When thoroughly dry, they are so hard that they can scarcely be cut with a knife. Small pieces of these cakes, steeped in water, produce a cooling and nutritious beverage. The Date Palm is diœcious, and so to ensure the perfect fertilization of the female flowers, it is customary for the natives to gather the male flowers from the wild Date, and shake the pollen over the cultivated or female plants. The number of spadices borne by each female tree varies from six to eighteen, or even twenty. For exportation, the fruits are gathered before they are quite ripe, the whole bunch or spadix being cut off and dried in the sun, or by gentle artificial heat.

The Fig.

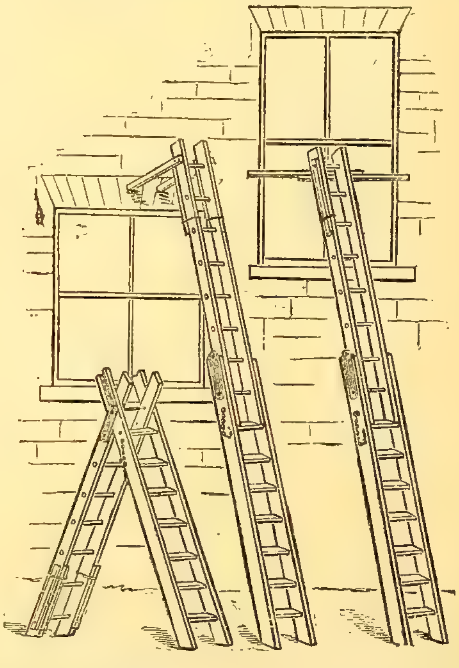
The Fig, though popularly called a fruit, is, in a botanical sense, a fleshy receptacle, or more of the nature of a compound fruit, the actual fruits being the small seed-like bodies mixed up with the pulp of the Fig. The flowers of the Fig are never apparent to the eye, being contained inside the pear-shaped fruit-like fleshy bodies which are produced in the axils of the leaves. The so-called fruit is a succulent receptacle which has assumed a hollow form bearing the true fruits around its internal walls. The Fig tree (Ficus Carica) is supposed to have been originally a native of Asia Minor, Northern Africa, and Southern Europe. At the present time, its cultivation extends throughout the islands of the Mediterranean and along both shores. With us it is well known as a wall-fruit tree, and sometimes as a standard, more particularly, perhaps, in the southern counties and upon the chalk. It is, however, liable to be cut down by severe frosts, sending up fresh shoots in the spring. Its introduction into this country is said to date back to the time of the Romans, and many fine trees of great size are still in existence in various parts of the country. It is in more sunny climes than ours that the Fig becomes a most important fruit tree. In the east a thorough system of cultivation is carried on, and the yield of Figs, at one time, largely increased by a system known as caprification, which consisted of hanging branches of the wild Fig on the cultivated plants. In the fruits of the former is always found a number of eggs of a species of Cynips, which, upon being hatched, find their way to the cultivated tree, and passing over the flowers in the interior of the receptacle, leave the pollen which they have conveyed, and so fertilise the flowers. This system of fertilisation seemed to have been known in very early times. It is now being generally abandoned, as it is considered not only unnecessary, but is said, moreover, to spoil the flavour of the fruit. Our supplies of Figs come chiefly from Turkey, Smyrna being the head quarters of the trade. The best quality is here produced. From Italy, and some of the Spanish provinces, as well as from the Greek islands, quantities are also imported. For exportation, Figs, like Dates, are carefully dried in the sun, or by gentle heat in stoves.

The fruits to which we have just adverted, are, perhaps, the principal in demand at this season of the year, notwithstanding the multitudes of others of varied form and character which meet our eyes at every turn. John R. Jackson.

MITCHELL'S CONVERTIBLE GARDEN LADDER.

This is a kind of *multum in parvo*, being a combination of a set of steps with garden wall ladders of various lengths. As a set of steps it is useful in the conservatory and greenhouse, and also in the pruning of standard and pyramidal fruit trees, and for gathering fruit, &c. It is so constructed that it cannot slip at the foot, and is consequently perfectly safe. As a wall ladder it can readily be increased to double its length, which can be still further increased by adding section to section, or stave to stave. It is provided with a receptacle for the purpose of holding nails and shreds, thereby obviating the use of the nail bag. It has also the advantage of being light and portable, as well as strong, and can be easily unconnected when not required for use, and stowed away in a small space. P. Grieve.

Culford.



NOTES OF THE WEEK.

Kew.—In the mild and equable climate of the West of England and of Ireland, many of the Grevilleas will succeed perfectly well in the open air. Grevillea is the most extensive, as well as the most handsome, of the Proteaceous genera, and contains species from about 1 ft. high—such as G. ericifolia—to lofty timber trees 100 ft. in height—such as the Australian Silk Oak—G. robusta. In the Winter Garden, the following species are to be seen in flower at the present time:—G. Helemanniana, known in some gardens as G. Preissii, has a light, airy style of growth; the pale green leaves are pinnate, the lower pinnæ being again pinnate, and the segments almost thread-like; the flowers are of a fine red colour, and, in combination with the delicately-cut foliage, make this species one of the prettiest of West Australian plants. G. macrostylis, also from West Australia, has a totally different habit from the last-named; it is of neat, compact growth, and its branches are closely set with stiff, ovate, trifid leaves, about 1 in. long, the umbels or fascicles of flowers being borne at the end of nearly every twig. The flowers are nearly 1 in. long, the outer surface being red, the inner yellowish, and the long, curved style exserted for nearly 1 in. G. rosmarinifolia has short, dense, terminal racemes of blood-red, green-tipped flowers, and very narrow, linear leaves, deep green above, white and silky beneath. This species will succeed as a wall plant in sheltered spots in all the southern counties.

Other two Proteads, belonging to the large genus Hakea, are also in flower, the two being widely dissimilar in foliage and habit. H. semiplana is a slender-branched shrub, with crowded, terete, slender leaves about 1 in. long, and innumerable crowded fascicles of small, yellowish-green flowers. H. suaveolens has axillary racemes of pure white flowers, and rigid pinnate or pectinate leaves. Templetonia retusa is a fine bushy Australian Leguminous plant, its large red flowers are borne singly in the axils of its wedge-shaped, maronate leaves.

A very pretty Amaryllid from Natal, Cyrtanthus McKenni, may be seen in the Palm-house. From the centre of its tufts of grass-like leaves spring the rather long scapes, each bearing an umbel of several curved, narrowed, funnel-shaped, pure white, deliciously-fragrant flowers.

In the Greenhouse (No. 4) we noticed a good specimen of Tecoma australis on one of the rafters. The flowers of this species are neither so large nor so showy as those of many of its congeners, but yet it is worth a place in a cool house; it is a tall, woody, glabrous climber, with more or less twining branches; the ovate leaflets are usually from five to nine in number, and the small trumpet-shaped flowers—in colour yellowish-white, tinged inside with purplish red—are borne in loose terminal panicles. This was introduced by Governor Patterson, from Norfolk Island, in 1793, and was considered to be a Bignonia. He stated that a very destructive blight generally makes its first appearance on the young shoots of this shrub, and spreads from thence over the whole vegetation of the island; on account of this the species was named Bignonia Pandoræ. A remarkable Campanulaceous plant, Canarina Campanula, is bearing its large, drooping yellowish flowers from the axils of short axillary branches. (This colour is extremely rare in the Natural Order Campanulaceæ, the prevailing one being blue of all shades). This, as its name implies, comes from the Canary Islands; it was cultivated in the Royal Garden at Hampton Court as long ago as 1696. It dies down after flowering through the winter, and remains dormant during the summer.

Among the Orchids, the following are the most noteworthy:—The Javan Vanda suavis has large, extremely odoriferous flowers. In colour they are porcelain-white, spotted and marbled with rich violet, the lip being deep violet. Catasetum tridentatum, from Trinidad, has thin, yellowish-green sepals; the upper petal forms a thick, fleshy, yellow hood, and the lower ones are, in texture, like the sepals, but thickly spotted with small, bright, reddish-brown dots. The Tropical American Epidendrum ciliare belongs to a section in which the labellum is broken into long and beautiful fringes; its flowers are greenish, with the exception of the pure white lip. Strong plants will bear racemes with more than a score flowers, and are very handsome objects. Dendrobium tetragonum is a very peculiar species from Queensland. It is remarkable for its very prominently 4-angled, pendulous stems, slender in the lower portion. The oblong leaves are from 2 to 4 inches long, and are produced from the summit of the stems; the loose racemes consist of a few comparatively large, yellowish-green flowers, bordered with brownish red. This species does not possess much merit from a horticultural point of view. A very delicate and charming Dendrobe is D. Farmeri; it has short, angular, club-shaped, channelled stems, the young ones bearing from 2 to 4 ovate leathery leaves at the top. From near the summit of the old stems are thrown out the pendulous racemes, which exceed the stems in length. The broad, ovate, obtuse, spreading sepals are of a pale straw colour, delicately tinged with rose; the petals are of the same colour and form as the sepals, the labellum being orange-yellow, bordered with pale straw colour.

Iris (Xiphion) Histrio blossomed with me in the open border on Christmas Day. It would be impossible to have a more beautiful little flower in mid-winter—but at this rate it is one of the latest rather than one of the earliest flowers of the year.—H. Ewbank, *St. John's, Ryde.*

Azalea Narcissiflora.—For supplying white flowers about Christmas time, this is one of the best Azaleas that can be grown. It forces readily, and its blossoms, which are semi-double, are of snowy whiteness, and last in good condition, both on the plant and in a cut state, much longer than those of single-flowered varieties. It is now in flower in several of the principal nurseries about London.

A Violet-Scented Dendrobe.—One of the most sweetly scented of Orchids is Dendrobium heterocarpum. Its flowers are of a rich creamy-yellow colour, and when fully expended their perfume is equal to that of the most delicately scented Violet. Though not so attractive in appearance as many of the other Dendrobes, it well deserves a place in every collection for the sake of its scented blossoms, which last long in good condition. It is now in flower in several nurseries about London.

Schizostylis coccinea and Winter Heaths.—Numbers of well-flowered plants of the beautiful Schizostylis coccinea, intermixed with winter-flowering Heaths, Correas, and similar plants, in Mr. Fraser's nursery at Lea Bridge, are now making a fine display. As a pot plant the Schizostylis deserves more extensive culture than it receives, for its bright flowers are very useful at this season, either when used in the decoration of the conservatory, or for supplying cut bloom. It succeeds best when grown in pots plunged in ashes during the summer, and if rich sandy soil be used for it, and it is kept liberally supplied with water, and moved to a cool frame when unfavourable weather sets in, handsome flowering plants during winter will be the result.—C. S.

National Rose Society.—We understand that the dates of the exhibitions for 1878 are now fixed. The Metropolitan one will be held at the Crystal Palace on Saturday, June 29, and the Provincial one at Manchester on Saturday, July 6, in common with the Manchester Botanical Society. In both instances the terms are stated to be most advantageous to the interests of the Society. The Executive Committee will shortly meet to arrange the schedules, in order that they may be submitted to a meeting of the General Committee.

Japanese Plants at the Paris Exhibition of 1878.—Japan will not only be represented industrially at the International Exhibition of 1878, but also from a horticultural point of view. A large stock of Japanese plants has just arrived in Paris, having been brought over in charge of two native gardeners. They were welcomed by those in charge of the horticultural department of the city of Paris, who at once placed their grounds, hothouses, and even their staff, at the service of their foreign *confréres.* The better part of the offer was, however, not accepted, in consequence of the Japanese not being able to speak any language but their own. Besides this, they evidently considered themselves quite capable of managing the plants under their charge without extra help. The plants consist of deciduous and evergreen shrubs of various kinds, and a few Conifers, all of which are dwarfs, the tallest being barely 3 ft. high. The collection includes a few fruit trees, several Magnolias, Daphne japonica, Gardenias, Spiræas, Osmanthuses, &c., also a number of Japanese Maples, among which will no doubt be found several of the well-known species with which we have long ornamented our gardens. Unfortunately, a large proportion of these plants have suffered much from the effects of their two months' voyage, a number having died. A large quantity of Orange trees perished, which is particularly unfortunate, because some of them may have belonged to the so-called hardy sorts of which we have heard so much frequently. On the other hand, it must be remembered, that without in any way wishing to call in question the gardening ability of our foreign colleagues, we must warn them that they are not yet at the end of their disappointments, and it is much to be feared that their want of experience of the climate of Paris will bring about much trouble and many vexations. We may add that these gardeners are strong, robust, and intelligent, and handle their tools, which are few in number, with great dexterity. These tools are of the most primitive character, and would be of but little value to a French gardener. M. Chantin, the well-known horticulturist of the Avenue de Chatillon, in Paris, will supply the plants (some hundreds of thousands) for the ornamentation of the gardens of the Exhibition.—"Revue Horticole."

THE FRUIT GARDEN.

THE VICTORIA NECTARINE.

From the favourable remarks in The Garden (p. 567) relative to the Victoria Nectarine, it is quite likely that many about planting may be induced to get that variety instead of some others of a more hardy nature, and if so they will, unless living in very favoured localities for the growth of these fruits, be grievously disappointed. For flavour, size, and free-bearing qualities it may, and is, I believe, deserving of all that is said of it; but what do these avail if the tree is too tender to grow except in warm districts? Here, and in many other places with which I am acquainted, it is a failure out of doors. The writer of the article speaks of his tree as having been forced all its life, and I should doubt if he has had any experience of it on open walls, or he would have reason to alter his opinion. That it is a valuable high-flavoured variety to grow under glass in a well drained border I readily admit; but those requiring trees on which they can depend to grow and flourish out doors, must not have the Victoria Nectarine among them. Its parent, the Stanwick, was anything but satisfactory, although greatly lauded at the time of its introduction, through happening to succeed well in one or two places where the conditions were favourable, but I do not suppose that it is now anywhere to be found. There is, however, no fear of the Victoria sharing the same fate; and those who have room in a good light house where they do not require very early fruit, will do well in giving it a trial, or to plant it to come in to succeed others. For forcing, there are none equal to Lord Napier, as it is at least a fortnight before any other, and always colours well, is large and handsome, of most exquisite flavour, and altogether one of the finest Nectarines that that prince of pomologists, Mr. Rivers, ever sent out. It is altogether so good as to be well deserving of having his name associated with it. Besides being so valuable under glass, it appears equally so out doors on walls, as a young tree with us is growing most vigorously, and will soon fill its allotted space. This and the new early Peaches will help to afford a prolonged supply. S. D.

PROPAGATING VINES IN GARDENS.

Considering the immense quantity of Grapes that are grown in this country, it is surprising that the propagation of the Vine in gardens is not more generally practised than it is. Like the propagation of many other plants, every attempt might not be crowned with success, but a fair percentage might easily be secured; and I can answer for the propagation of young Vines being quite as interesting as that of any other plant. We annually put in a few eyes here which produce a number of canes for forcing, and sometimes we have a few to give away. At one time I always selected the very strongest wood I could get of which to make the eyes, but now I take them from the small wood, because I find that they start much freer into growth, and make equally fine canes as those made from thick wood. For canes to force, Black Hamburgh and Foster's Seedling are the two of which the greatest numbers are propagated; other sorts are generally raised for planting. When pruning, select the wood as it is cut off for the eyes. We have done this with ours, and the pieces which are about 18 in. in length are at present stored with their lower ends in the ground. This prevents the wood from becoming dried up The first week in January they will be taken in hand, when each bud will be cut away with 2 in. of wood at its lower end. Immediately above the bud the wood should be cut square across, and a slice 1 in. in length should be taken from the lower end, making it taper to a point. This is all that is needed. Fill a 3-in. pot full of loam, leaf-soil, and sand for each eye, then take it and press it into the centre of the pot, fixing the soil firmly round about it with the hand. Let the soil be moderately moist to begin with, and do not give any water after finishing, but set the pots closely together on a shelf or floor in a cool house. Here they may remain until the first week in February; then take them and plunge them in any kind of material where they will have a steady bottom-heat of 70°. About a week after they have been plunged, give them a thorough watering with water at the same heat as that in which they are placed. After this they will soon begin to grow and make leaves. As soon as the young shoots are 6 in. in length, a good many roots will have been formed, and the pots must be taken out of bottom-heat and exposed in any house or frame where there is a temperature of 65° or 70°. As the bottom-heat in which they were plunged was not above this, they will receive no check, but continue growing, and when the shoots are from 15 in. to 18 in. in length, they must be shifted out of small pots into 8 in. ones, if the canes be intended for planting, and into 12 in. ones, if fruiting rods are required. As, when putting in the eyes, let the soil, which must consist of good fibrous loam, with a little manure and wood ashes added, be moderately moist, when potting, and do not give any water at the root for a week or ten days after this. By that time the roots will be near the outer edge of the fresh soil, and from this time forward water abundantly. To give them justice, they should be grown in a warm, close, house until the latter part of May, when they may be subjected to the same treatment as Grapes that are beginning to colour. When the canes attain a length of 6 ft., pinch the top off, and do not let them grow to a greater length. From this time until they are half-ripened, give liberal supplies of liquid manure. They must at all times be kept perfectly free from insects. They should be fully grown by the middle of August at the latest, and, after that, attention must be principally directed to getting them thoroughly ripened, for in that lies the whole secret of successful culture. Let them be fully exposed to the sun. Do not give them so much water as when they were growing freely, and air must be allowed to circulate freely about them, but they dislike cold draughts. There are other ways of propagating Vines besides that just recorded, but they are more complicated, and therefore less worthy of attention.

Cambrian.

Winter Covering Fig Trees.—Although the wood of Fig trees will withstand any ordinary frost without injury, it is best to be prepared against exceptionally severe weather, as I find trees of several years standing to be much more fruitful than young, fresh-planted ones, which even in poor soil will produce shoots of too luxuriant growth to either withstand frost or produce much fruit; and, as the labour involved in protecting is trivial compared with the crops which a few good trees may be relied on to yield, I find it best in our uncertain climate to cover the trees about the first week in December. Our trees, which are fan-trained, are unfastened from the wall, and the wood is laid in a bundle at its base, where it is easily covered with any available material. We use Reeds for the purpose, from their being plentiful on the marsh lands here, and therefore of little value; they are cut and stored in autumn, and they will last good for several seasons. We cover the bundles of shoots sufficiently thick to exclude light, as that, acting on the frozen wood, is probably more injurious than frost. As soon as all danger from severe frost is over, the covering is removed, when any pruning required is done, and the wood is again fastened in its former position. Short-jointed, well-ripened shoots will almost invariably produce a crop, even when other fruit crops fail. The longevity of Fig trees is proverbial; the finest and most certain-cropping tree we have is probably over 100 years old, and is annually laden with hundreds of fine fruit.—J. Groom, *Henham.*

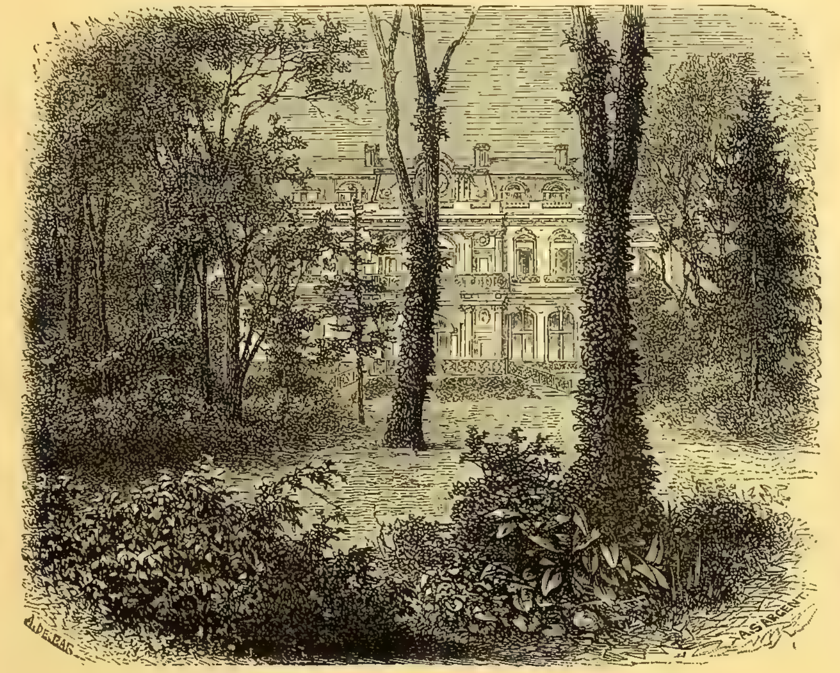
Inside Vine Borders.—How am I to make an inside border for Vines in a house in which there are already six Vines planted outside on a grouted border? I can have 5½ ft. wide of a border inside, but I can go much deeper than the outside one, which is only about 2 ft. deep; my front wall is 2½ ft. high from the surface, but there is about 2 ft. of a foundation. Kindly name the number of Vines which it will take, and the best sorts for it. I should add that the house will be without heat, except in very cold or wet weather.—Pompone. [The border being 5½ ft. wide, the best way would be to fill 3 ft. of that space by first stacking up turves (Grass downwards) to form a front wall, and filling the intervening space between this and the front of the house with turves broken roughly to pieces with a spade, to which has been added a bushel of ½ in. bones to the cart-load, also a few barrowloads of horse droppings. This will give ample space in which to plant the Vines, and the rest of the border can be made next year, or when the Vine roots have become so numerous as to require more room; 2½ ft. will be deep enough. The Vines, when established, will be benefited by a mulching of rotten manure in summer, and, when the bulk of this is removed in winter, a coat of good soil may be put on with advantage. The Vines should be planted 2 ft. apart, every other one being allowed to bear fruit as soon as it w l do so. The remainder must not, however, be fruited until well established, when they should be allowed the whole house, those which have borne fruit being cut down. The best kinds are Black Hamburgh, Gros Colman, Black Alicante, and, for white kinds, Buckland Sweetwater or Golden Queen.—S.]

THE FLOWER GARDEN.

GROWING THE FLAME NASTURTIUM.

The reason why your correspondents fail to get this established most probably is, that they plant it at the wrong season of the year, as by bedding it out early in spring, after first starting the tubers in pots in a greenhouse, I have never experienced any difficulty with it. If planted in the summer, unless it has made some considerable growth before, there is not time for it to ripen, and if overtaken by frost, while in an immature state, the roots are almost sure to perish before winter is over. Those who are desirous of growing this beautiful hardy plant to perfection, should get tubers at once, and pot them in fibry loam, giving them, while doing so, a sprinkling of sharp sand around them, which will prevent moisture lodging in sufficient quantity to cause them to rot. To obviate this, no water should be given till the young shoots appear above ground, and only then in very small quantities, as that is the critical stage with them; but once they get into leaf and start away freely, they, like most other rapid-growing plants, take it up quickly, and are fond of a cool, damp soil to grow in. Nowhere, perhaps, is Tropæolum speciosum seen in the healthy luxuriant condition it is in Scotland, as there the atmosphere appears more congenial to it than it is in more southern latitudes, where, in many cases the foliage becomes a prey to red spider, an insect pest to which it is very liable, and is one of the reasons why the plants fail to flourish with many. The situation where it succeeds best is behind a north wall or fence, where it gets plenty of shade, and cooler air than it would enjoy anywhere else. In a place of this kind, red spider rarely attacks them, and, if it does, it is not to anything like the same degree as occurs when it has solar heat to favour its increase, as then it spreads with great rapidity, and it is no easy matter to keep it in check. The neatest way to train the shoots, when the plant is growing near a wall, is to strain pieces of fine string or wire vertically at about 6 in. apart, up which the young shoots will twine, and support themselves against wind and weather. All that is necessary is to start them on their way by leading them to the several strings, so as to regulate the growth, and help to clothe the space desired. In planting, it is always advisable to put some silver-sand or sharp grit over the tubers, as it enables them to winter better than they would if they came in immediate contact with the soil. The flowers of Tropæolum speciosum are so exceedingly brilliant and attractive that it is a pity it is not more generally known and cultivated. T. pentaphyllum is likewise hardy and a very desirable plant to grow; but, unlike its congener above-named, it revels in sunshine, and does splendidly on the south end of a greenhouse or other warm aspect. The habit of this is altogether more robust, and very effective when covered with bloom, which it produces most freely. Both kinds admit of ready increase by dividing the tubers, or from seed or cuttings, but the latter must be put in early to afford time for forming roots of sufficient size to live over the winter.

S. D.



In a City Garden.

Long-buried Seeds.—I have ever been sceptical as to mummy Wheat and the Oats that are said to have grown when the soil in a Roman station has been disturbed, but I cannot entertain a doubt that the seeds of Henbane will germinate after being buried for many years. I have made the strictest inquiry, and I cannot find that any Henbane has been permitted to flower or seed in the garden here or on the adjoining land within human memory. Yet on almost every occasion when we have disturbed the soil to a greater depth than ordinary a few plants have sprung up. About ten years ago, when I made a sunk fence to cut off the western part of the garden from the adjoining Grass field, quite a crop of these plants appeared. The land had certainly been pasture for many generations, but it was probably in pre-Reformation times a part of the garden of the preceptory of the Knights of St. John of Jerusalem, which stood very near. There seems also good reason to believe that the seed of Flax will retain its vitality for a long period. An ancestor of mine, about the year 1745, laid down to Grass a field which had been under cultivation by the plough. As was not uncommon in those days, the last crop he took was Flax, and Grass seeds were sown amongst it. Somewhere between sixty and seventy years after this my grandfather found it necessary to drain the field, and, as every one who has had to do with work of this kind knows, in draining work there is always some soil to spare, *i.e.*, more than will fill the trench without a hillock being raised over it. My grandfather disliked seeing these long, unsightly hillocks and ordered the waste soil to be strewn about over the turf. The work was done in the winter, and when spring came a quantity of Flax sprang up among this soil. I was told the above fact by my father, who saw the Flax growing, and who was a careful observer. He did not think it possible that the Flax seed could have been scattered there after the soil was disturbed, but held the opinion most confidently that it had lain in the ground ever since it was "laid down to Grass," upwards of sixty years before.—Edward Peacock, in "Notes and Queries."

A City Garden.—This glimpse into a quiet city garden, with trees, and Grass, and Ivy, and flowers, may serve to remind us that a city garden may have many charms not usually associated with the town. There are even peculiar advantages for gardening in some cities, where the air is comparatively pure, in the perfect shelter and increased warmth which city gardens often enjoy as compared with the surrounding country. As regards good private gardens in London, they are not nearly so numerous or so well stored as one would expect from the numbers of rich people who have houses in it. Some gardens, such as those of Montague House and of Oak Lodge, may be named as creditable examples of what a town garden may be made; but such are too rare. In Continental cities one is frequently surprised to find a charming oasis of trees, and flowers, and Grass, hidden by high buildings from the noisy street. Through the courtyard and the house, and out into a shady group of trees, with fresh Grass, and Ivy, and Yuccas, and a few evergreens, and the grateful coolness and quiet, is a common experience abroad, where finer trees are often found in small private gardens, hidden from public view by high houses, than in the avenues or public squares.

Such a garden is the one we figure, with its little fresh lawn, ample for the position; old Ivy-clad trees; beds of Pansies in May, when we saw it; hardy Yuccas, and Acanthuses in groups; and Aucubas, Ivy, and Periwinkle on the ground beneath the trees.

CULTIVATION OF PANSIES FOR EXHIBITION.

For spring planting, select a sheltered piece of ground that has been well manured, throw it up in ridges for the winter, and let it remain so until favourable weather has set in in March, when it should be forked over and well broken. In planting Show Pansies, lay out the beds 4 ft. 4 in. in width, and of a length to suit the collection. Plant four in the breadth, leaving 1 ft. between the plants, and 8 in. from the edge of the bed to the outside plants. A bed of mixed Pansies has a fine effect; but, if seed be wanted, it is best to keep the plants in classes. Previous to planting, have some fresh turfy loam at hand, and, having made the hole for the plant, put in some of the new loam in the form of a cone, spread the roots over this, and fill round the neck of the plant with the same loam. This causes the stem of the plant to emit roots, and gives it a fresh hold. When the plants have been growing about two months or so, give them frequent waterings of liquid made of sheep or cow manure, taking care not to touch the foliage or go too near the neck of the plant with it, and when the surface of the bed gets caked, run a Dutch hoe between the rows. Stake the plants as they require it, so that they may not be broken by the wind, and remove all superfluous shoots as they appear, leaving from three to four leading stems for flowering. The plants will be much benfited by a top-dressing of new loam and old cow manure about the middle of June. As soon as they get into a flowering state, pick off the blooms as they expand (in order that the plants may not be weakened more than is necessary) until about ten or twelve days before the blooms are required for exhibition, when all may be allowed to remain.

For shading material, I would recommend cardboard caps tacked on to a piece of wood, the mouth of the cap being 4 in. in diameter. Self flowers should be shaded as soon as the bud has reached its full length prior to opening; but white and yellow grounds may be allowed to half expand, so that it may be seen whether or not the lacing, &c., is complete, and the bloom otherwise in true character. There is a diversity of opinion as to how Pansies should be exhibited. The Scottish Pansy Society makes it imperative that blooms be shown on stands painted green without paper cards, while in the west of Scotland they are universally shown on white cards, about $\frac{1}{4}$ in. larger than the blooms, on stands painted green. I prefer show Pansies to be exhibited on white cards, as they can be set off to the best advantage in that way. The flowers may be cut in the afternoon preceding the exhibition, carding and placing them in their position at once. Young flowers which will not lay had better be kept out of water for an hour or two, when they will be more easily handled. Lead off with the flowers of the largest size—say dark selfs, white grounds, yellow grounds, and so on, varying the colours, so that two of the same class may not be either directly at the side, above, or below each other.

About the beginning of August, pinch a few of the leading stems, which will induce shoots to break out that will make fine, short, stout cuttings which may be taken off by the end of September. Prepare a cold frame, dig deep, and break the soil well, removing any earthworms, as they are apt to draw out the cuttings and cause confusion. As to soil, make up a compost of two parts fresh loam and one river or pit sand; of this put on 3 in.; draw lines 3 in. apart, and insert the cuttings 2 in. from each other, fixing them firmly in their position with the forefinger. Water gently, and keep the frames close for about ten days, shading, if necessary. After this, air may be given, night and day, during favourable weather, and when they are rooted, the more air they get while the weather is fine the better. Remove all decayed leaves as they make their appearance, an operation which is best done with a pair of sharp-pointed scissors. In the west of Scotland it is not practicable to plant in the open ground in autumn; but, where the climate will allow it, and if early blooms be wanted, it is necessary to do so. Cuttings may be put in in the latter end of July, and planted out in September or October.

The culture of fancy Pansies differs but little from that of the show kinds. They should be planted 15 in. apart, being robust growers, and the situation should be more exposed to the sun than for show kinds, so that their bright colours may be brought out in all their brilliancy. The great improvement that has taken place in this class within these last few years is very marked, many of them having as fine form, eye, and texture as the best of the showy varieties; one, therefore, would require to grow them, or see them in bloom, to form any idea of their real worth and beauty.

The Pansy's chief enemies are wireworm, slugs, and fly. In planting, care must be taken that no wireworms are introduced in the new loam; should they occur, they are easily trapped by small pieces of Carrot or Potato laid about 1 in. under the soil near the plants, and which must be inspected every three or four days. Slugs are best kept down by hand-picking early in the morning and on showery evenings; should fly attack the plants, as it frequently does in June or July, take a common tub or pail, put into it 1 lb. soft soap, pour on it sufficient warm water to dissolve it, and add 1 gill Tobacco juice as received from the tobacconist; mix well, and strain through a piece of coarse pack sheet, and put 1 pint of this to 2 gallons of soft water. With this mixture syringe the plants, selecting a showery evening for the purpose, and apply it every other night until the fly is fairly got rid of. Should the weather be dry when they are infested with this pest, syringe the plants with clean water before using the solution, and syringe again with water in an hour or two.

The following is a list of the best Pansies for exhibition:—

Abbreviations—D. & L., Downie & Laird; D. & Co., Dicksons & Co.; W., White; F., Fulton; T., Taylor; R., Robertson; H., Hooper; D., O., & Co., Dickson, Orr, & Co.; P., Paul; C., J. Cocker & Sons.

Dark Selfs.—Alexander Watt (P.), Beacon (D. & L.), Captain Knowles (F.), Count Bismarck (P.), Dux (D. & Co.), James Dalziel (W.), Juber (D. & L.), J. P. Barbour (P.), John Rowatt (P.), Lizzie (W.), Luna (D. & L.), Mauve Queen (P.), Michael Saunders (P.), Oceola (P.), Rev. J. Morrison (T.), Rev. D. Taylor (D. & L.), Robert Black (D. & Co.), William Forbes (P.)

Blue Selfs.—Chieftain (D. & Co), Royal Blue (P.), Sunny Park Rival (C.)

White Selfs.—Bessie Peacock (D., O., & Co.), Jenny Anderson (D. & Co.), Mrs. Todd (P.), Mrs. W. Old (D. & Co.), May Queen (D., O., & Co.), Miss Ramsay (D. & L.)

Yellow Selfs.—Citron (P.), Dr. Masters (D. & L.), John Scott (P.), Mrs. Horsburgh (D. & L.), Maranta (D. & L.), Yellow King (D. & Co.)

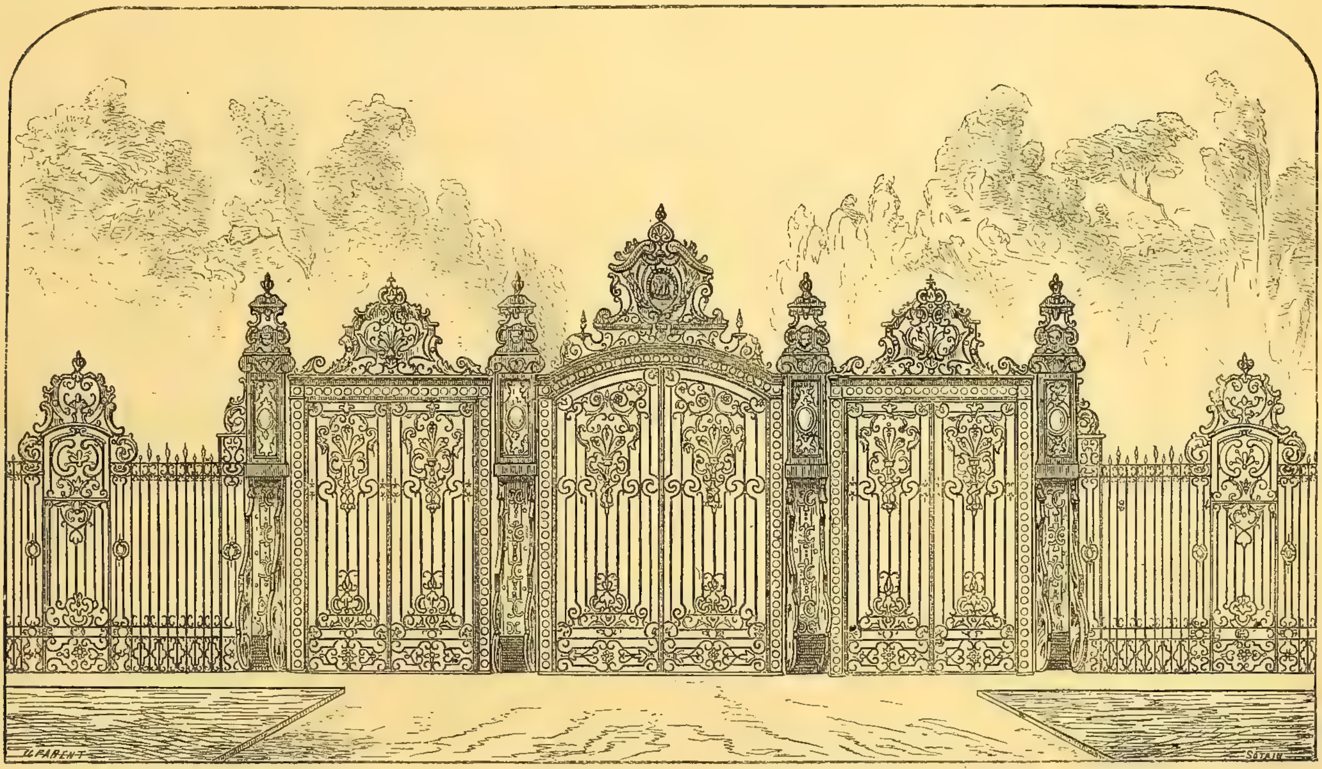
Yellow Grounds.—Alexander Mc'Lennan (P.), Captain Cluthie (D. & L.), Clonard (P.), Defoe (D. & Co.), Dr. Livingstone (Small), Ebor (D. & Co.), George Steedman, James Orr (P.), J. B. Downie (D. & L.), John Smith (F.), John Currie (D. & L), John Waterston (R.), J. W. Will (P.), Maggie Dunn, Miss Hope (T.), Miss Rogers (P), Mrs Russell (D. & L.) Normond (D. & L.), Oracle (P.), R. K. Mitchell (T.), Robert Burns (D. & Co.), Robert Pollock (P.), R. Sibbald (T.), Von Moltke (P.)

White Grounds.—Ada (D. & L.), Beautiful (P.), Capt. Speirs (P.), Delicata (P.), Janet Lees (P.), Jeannie Grieve (D. & Co.), Leah (D. & L.), Lizzie Goudie (P.), Minnie (P.), Miss Adamson (D. & L.), Mary Paul (P.), Mary Robertson (R.), Miss E. Cochran (W.), Miss Tod (D. & L), Mrs. Arthur (F.), Mrs. Bunyard (D. & L.), Mrs. Eyles (H.), Mrs. Fraser (P.), Mrs. Henderson (D. & L.), Mrs. Owen (P.), Mrs. R. B. Matthews (P.), Princess of Wales (D. & L.), Sunnypark Beauty (C.), The Duchess (Andrew).

The following are fine fancy Pansies:—Adonis (C.), Amelia (P.), Attraction (P.), Bailie Goodwin (P.), Buttercup, Cecilia (P.), Duchess of Edinburgh (C.), F. W. Leland (P.), George Wood (D. & L.), Hector (C.), Hon. Mrs. Beatson (D. & L.), James Taylor (T.), J. A. Welsh (D. & Co.), J. B. Downie (D. & L.), Jessie Clelland (P.), John Currie (D. & L.), Lady Bethune (D. & L.), Maggie Henderson (P.), Miss Lizzie Matthews (P.), Miss Wallace (D. & Co.), Mrs. Birkmyre, (P.), Mrs. James Watt, (D. &. L.), Mrs. L. T. Fleming (D. & L.), Monarch (D. & L.), Nelly Thompson (T.), Parrot (P.), Rosamond (P.), P. W. Fairgrieve (D. & L.), Sunray, (P.), Thalia (P.), Timon (C.), Thomas Grainger (D. & L.), Unique (P.), Vesta (P.), William Broadfoot (C.), William Melville (D. & L.),

Paisley. Wm. Paul.

Pyramidal Sweet Bays.—Where the climate is sufficiently mild for these to be successfully cultivated, there are few evergreens that form prettier objects, or that give the lawn and pleasure grounds so warm and furnished an aspect during winter as Sweet Bays in the form of pyramids. We have several single specimens of them on Grass, which sets them off to the greatest advantage, and in the foreground of shrubberies they are equally effective. The pyramidal form is that which the Bay naturally assumes without any training; but, if left entirely unpruned, the branches become weak, and a heavy fall of snow will sometimes destroy the symmetrical shape of the tree, whereas, if the leading and strongest side shoots be shortened to about half their length in autumn, the tree becomes densely furnished with side spray, and the principal branches are thus rendered sturdy enough to withstand all weathers. In addition to the pleasant perfume given off by the leaves, the Sweet Bay is a profuse-blooming plant, and with us usually perfects a good crop of black berries. The leaves are in frequent request for culinary purposes, and for drying with those of other scented-leaved plants. Although some of our winters have been severe in this locality, I have never seen a leaf discoloured, while a little further inland it is by no means a rare occurrence for this and similar evergreens to suffer considerably.—J. Groom, *Henham.*



A Wrought-iron Park Gateway.

Propagating Mistletoe.—At this season of the year, when so many possess Mistletoe berries, it may interest some to know how to obtain plants from these berries. Select two or three of the finest of them, and when the wood of any Apple tree, on which it may be desired Misletoe should grow, is quite dry, take one of the berries between the finger and thumb, and rub it gently on the part of the tree where the Mistletoe is wanted to grow. When the berry breaks, the gummy juice inside causes the seeds to adhere to the bark. In a short time two small prongs will be emitted from the centre of the berry; and these will turn round and root and grow on the branch to which the berry is attached. This is a simple way of propagating the Mistletoe which any one may try with success.—Cambrian.

The Flora of Greenland.—On the strips of the land near the coast the greenland flora, though scanty, is very pleasant to the eye. Vegetation covers the ground in thick masses, forming turf in the leval places, while it fills the chinks and crannies of the rocks, and creeps over the surface of the stone, giving a bright appearance to the land in summer. The prettiest thing of all is the Club Moss, with its grateful little white bell flowers like miniature Lilies of the Valley. With it are generally the Dwarf Willow and Birch and the Whortleberry, with its red berry and glossy little leaves. As far as Disco, not further north, there are beds of Lady's Mantle and Angelica, and masses of Holly Fern, the erect red blossom of the Pedicularis, bright little red and white Saxifrages, Dandelion, Potentillas, and Ranunculus, the Arctic Poppy, the sweet-smelling Ledum palustre, and the showy purple blossoms of the Epilobium alpinum. The study of Greenland botany, interesting in itself, derives special importance from the hypothesis to which its remarkable character has given rise. It has been suggested that the Scandinavian flora, which is one of the oldest in the globe, extended during the warm period preceding the glacial over the whole Polar regions, including Greenland and Arctic America.—Clements Markham.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Yucca recurva.—This, with us, is the most graceful and effective of hardy fine foliaged plants. Some single specimens of it planted here about five years ago are now perfect models, both as regards shape and healthy development. Older specimens that have flowered, branch into many crowned heads, and loose the symmetrical proportions of younger plants. A row of established plants of this Yucca in terra-cotta vases, flower profusely, a circumstance which I attribute to the restriction put on the roots.—J. Groom, *Henham.*

Planting Hardy Bulbs.—November is generally recommended as the best month in which to plant out-of-door bulbs; but if any one takes the trouble to lift a few bulbs at that period that have been left in the ground, they will find a good quantity of roots and the top growth considerably advanced, clearly showing that November is too late, as a rule, for planting.—J. G.

Hardiness of Omphalodes Luciliæ.—I can fully endorse all that Mr. Atkins says (see p. 558) respecting the hardiness of this beautiful plant, having grown it myself for some years, and also from having seen Mr. Atkins' plants which, as he states, are in a bleak situation on the Cotswolds. I have sometimes found that seedlings of it differ in not having that deep glaucous hue that the parent possesses. I have always found cuttings to make the best plants.—E. Jenkins.

THE GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

South American Region.

As already explained, the extent of country in South America from which we obtain hardy plants is comparatively small, and many of the plants we have in cultivation from that part of the world are only suitable for the milder parts of the kingdom. There are, however, some, such as Berberis Darwini, for example, which are perfectly hardy; and nearly every one of those contained in the following list has its special merits. Doubtless further exploration would lead to the discovery and introduction of many other equally ornamental species. The vegetation of temperate South America forms two distinct floras. The plains of the eastern side and centre are almost treeless, except on the banks of the rivers, and covered with coarse Grasses and thorny shrubs. These Pampas, as they are termed, extend northwards, and include part of Uruguay, gradually passing into the forest region of Brazil. Gynerium argenteum, or Pampas Grass, is one of the characteristic plants of this region, and the recently-introduced Eryngiums, as E. pandanifolium, E. bromeliæfolium, &c., are from the northern part. At the present time thousands and thousands of acres, one might also say square miles, are covered by two or three European plants. The commoner ones are—a Thistle (Onopordon Acanthium), Fennel (Fœniculum vulgare), and the Cardoon (Cynara cardunculus). The western side of Patagonia, as well as the southern extremity, is more or less mountainous, and the coast is skirted with numerous islands. Nearly the whole of it is well wooded, even down to Tierra del Fuego. The most prominent trees in the extreme south are two species of Beech, an evergreen one (Fagus betuloides), which is ornamental and quite hardy on our south-western coast, and a deciduous species, F. antarctica. According to Dr. Hooker, F. betuloides is the most prevalent species in Hermite Island, and becomes a large tree about the Straits of Magelhaens. It forms the prevailing feature in the scenery of Tierra del Fuego, especially in winter time, from its upper limit being sharply defined, and contrasting with the dazzling snow that covers the all but naked branches of the deciduous-leaved species F. antarctica. Its upper limit at Cape Horn in lat. 56° is 800 ft.; in the northern part of Tierra del Fuego it ascends to 1400 ft. At Port Famine, on the testimony of Dr. King, trees of the evergreen Beech 3 ft. in diameter were abundant, and one measured 7 ft. in diameter at 17 ft. above the roots. At the northern extremity of the temperate forest region, in the mountains of the province of Araucan, South Chili, is the home of Araucaria imbricata. It forms dense forests, and grows to a large size. Our concluding remark on the vegetation of this region shall be in praise of the incomparably beautiful hardy Fuchsia (F. macrostemon), which, in its southern habitat, presents a number of distinct varieties described by travellers as the great charm and ornament of the vegetation.

General List of Hardy Plants.

- Berberis Darwini
  - ,, empetrifolia
  - ,, ilicifolia
- Berberidopsis corallina
- Azara serrata
  - ,, dentata
  - ,, integrifolia
- Aristotelia Macqui
- Lathyrus magellanicus
- Geum chiloense (synonym—G. coccineum)
- Escallonia rubra
  - ,, macrantha, and other species
- Eucryphia cordifolia
  - ,, pinnatifolia
- Gunnera scabra
- Fucshsia macrostemon
- Loasa aurantiaca
- Passiflora cœrulea
- Eryngium pandanifolium, &c.
- Mutisia decurrens
- Pernettya mucronata
  - ,, pumila, and other species or varieties
- Desfontainea spinosa
- Physianthus albicans
- Fabiana imbricata
- Solanum jasminoides
- Calceolaria Fothergilli, and others
- Buddleya globosa
- Lippia (Aloysia) citriodora
- Ercilla spicata
- Embothrium coccineum
- Fagus antarctica
  - ,, betuloides
- Araucaria imbricata
- Libocedrus tetragona
- Fitzroya patagonica
- Saxe-Gothæa conspicua
- Alstrœmeria aurea
- Lapageria rosea
- Philesia buxifolia
- Gynerium argenteum

New Zealand Region.

The flora of New Zealand has already been pretty fully described and contrasted with the vegetation of the United Kingdom; and some remarks on its climate will be found in the same place. Without exception, it may be stated, New Zealand plants require protection, except in the warmer parts of the kingdom, where, however, perhaps all, except those peculiar to the warmest part of New Zealand, will thrive. It does not come within the compass of this essay to enlarge upon points which would probably interest but few, and therefore the list of New Zealand hardy plants is very small. Indeed, if we compiled a list of plants from the Australasian region, hardy in the Scilly Islands, it would include, besides New Zealand species, hundreds of South Australian plants. A few of the more familiar New Zealand plants are—Clianthus puniceus, Edwardsia grandiflora, Veronica Andersoni, Phormium tenax, Cordyline australis, Dicksonia antarctica, Griselinia littoralis, and various species of Panax.

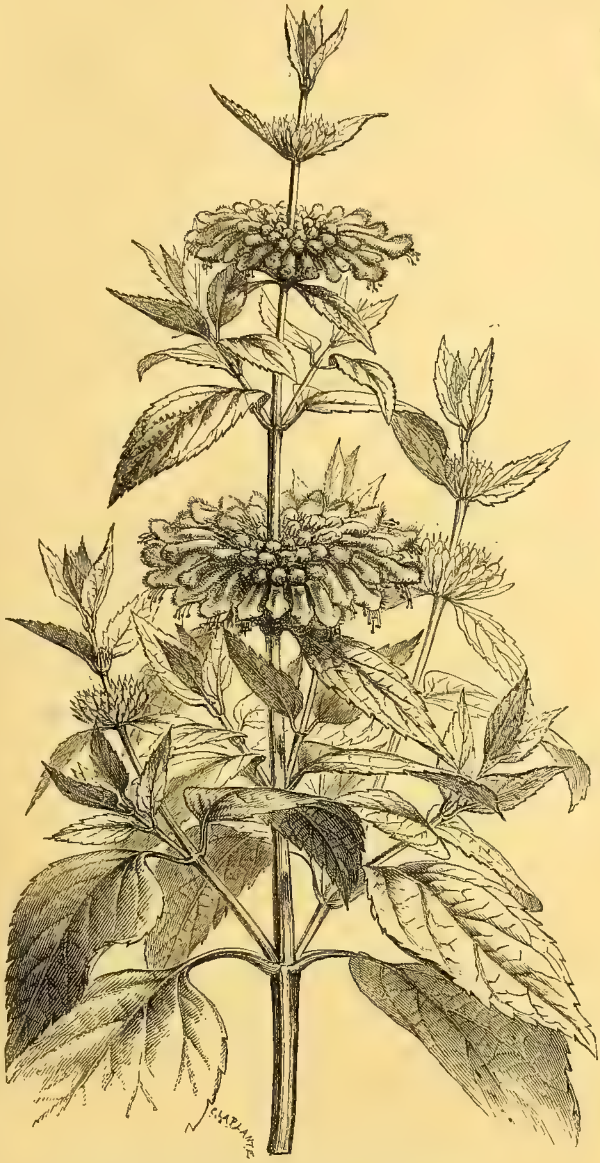
Hardiness of South Australian Plants.—It may be worth while adding an observation or two respecting the hardiness of some of the Australian Acacias having pinnately-divided leaves, because they are so exceedingly elegant that it is desirable to plant them wherever they will succeed. Several of them which are natives of the mountains of Tasmania and South Australia will bear the ordinary winters of the south and west of England and Ireland; and, if cut down by an unusually severe frost, will shoot from the root again in spring. The hardiest are A. dealbata (the Silver Wattle of the Australians), A. decurrens (the Black or Green Wattle), and A. discolor. These trees appear to possess a very elastic and accommodating constitution, as does also a species of Eucalyptus (E. polyanthemos) in the open air at Kew, which was only very slightly injured by the severe frosts of 1860-1.

South African Region.

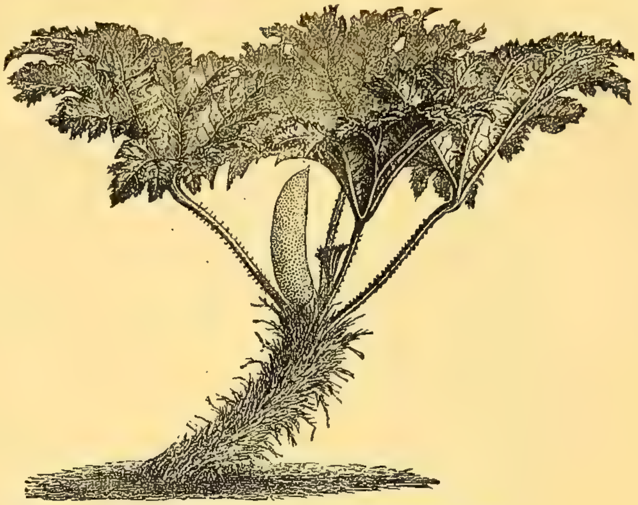
With this, the warmest of the regions whence we obtain hardy plants, we shall conclude our remarks on the geographical distribution of plants hardy in the United Kingdom. The number of species is not large; they are all herbaceous plants, or will throw up new stems annually from the root, if cut down, and thus, by their habit of growth, are protected from the influences of weather. A few, like Kniphofia aloides (syn. Tritoma Uvaria), and allied species, inhabit the mountains which range from nearly 4000 ft. (the Table Mountain) to 8000 ft. (Graaf Reinet), and are perfectly hardy. Others, as Richardia æthiopica, and Aponogeton distachyon, treated as aquatics in tolerably deep water, escape frost, and are thus so far hardy. Again, many of the splendid Cape bulbous plants, as Gladiolus, Ixia, Sparaxis, &c., may be left in the ground all the winter, if the soil is light and the bulbs not too near the surface. Melianthus major, Lobelia Erinus, Phygelius capensis, and Agapanthus umbellatus, are also hardy in this qualified sense.

Distribution of Exotic Plants requiring the shelter of a cool Conservatory or Greenhouse during the colder half of the year.

General Remarks on Climate, &c.—The distribution of hardy plants having been treated of at considerable length, and much that is said under that head being of general application, the outline of the distribution of sub-tropical or greenhouse plants and tropical or stove plants from a horticultural point of view, may be traced in a few pages. The countries whence we obtain sub-tropical plants, are almost identical with those lying between the north and south tropics and the boundaries of the temperate regions as defined under the geography of hardy plants. Frost is almost unknown, and in the warmer parts, bordering the tropics, the temperature never descends to the freezing point. The average temperature of the coldest month, January or July, according as the country is situated in the north or south hemisphere, is from 40° or 45° to 55°, and the mean annual temperature ranges from 55° to 75°. Maritime countries in this zone enjoy a cooler summer than most Continental places in the southern part of the north temperate zone; but here also the mean annual amount of heat may be the sum of a comparatively cold winter and a hot summer,



South Africa: The Lion's Tail (Leonotis Leonurus).

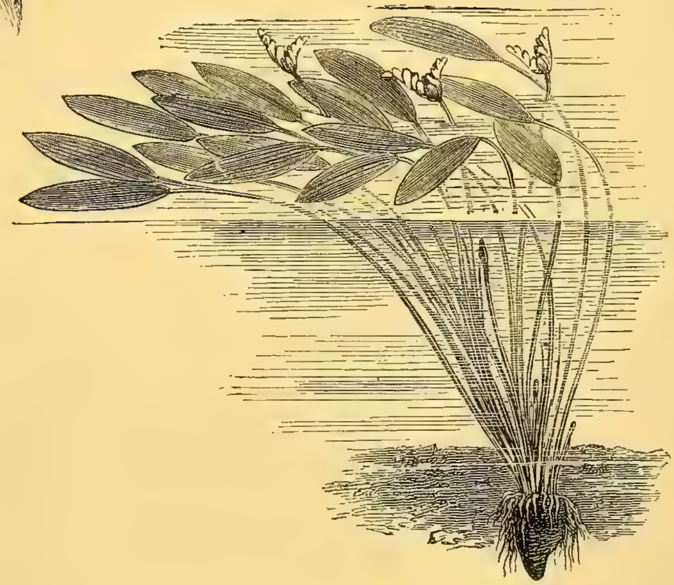


South American Hardy Plant (Gunnera scabra).

Pinnate-leaved Acacia.

Yam.

Sub-tropical Fruit (Citrus).



Hardy Aquatic from S. Africa (Aponogeton distachyon).

GEOGRAPHICAL DISTRIBUTION OF GARDEN PLANTS.

or the sum of a relatively warm winter and cool summer. The distribution of heat within the tropics is also considerably influenced by the disposition of land and water, though to a much less extent than in the extra-tropical northern regions. The highest mean annual temperature, given by Dove, is 81°·5 Fahr., and the regions where this temperature prevails nearly all lie north of the equator. There is, however, far greater inequalities in the distribution of moisture in sub-tropical, or warm, temperate countries, and this is a point of greater importance in practical gardening. It is not so much the actual amount of rainfall, as the number of rainy days and the average degree of humidity of the atmosphere.

Hardy Passion Flower—Cool Region of South America.

Different Classes of Plants.—Three different classes of plants are an index to as many different degrees of humidity. The Ferns and herbaceous plants of New Zealand; the shrubby and arborescent vegetation of extra-tropical Australia and South Africa; and the succulent Mesembryanthemums, Stapelias, &c., of South Africa, and the Cactaceæ of Mexico. The first live in a very humid climate, the second in an intermediate, and the last in a very dry one. Another condition of climate is alternately dry and wet seasons, answering to the growing and dormant periods of plant life in most warm countries; and then there are the desert or rainless countries.

Rainless Regions.—These are nearly all situated, in both hemispheres, in the sub-tropical regions, and in adjoining tropical regions; not a large area being within the tropics, and scarcely any near the Equator. Collectively these deserts form two interrupted belts around the world—a northern and a southern. The northern, and much the larger, rainless belt, does not correspond to latitude exactly, but it nowhere gets beyond the limits between about 16° and 30° of latitude. The vegetation of these rainless regions is extremely scanty, and reduced to a few thorny bushes and succulent plants. In South-Western Africa, beginning just north of the Orange River, there is a large tract called the Kalahari Desert, and it is in this country where the curious Welwitschia, referred to before, occurs. The total area of desert country has been computed at about 5,000,000 square miles, or nearly one-tenth of the whole surface of the dry land.

Food Plants.—In sub-tropical countries the food plants, and other staple crops, are mainly different from our own, though Wheat and Barley are largely cultivated; but they are harvested during the colder season of the year. Maize, Millet, Cotton, Indigo, Yams, Tea, the Orange tribe, various leguminous crops, &c., are among the most useful food plants of the sub-tropical region.

Range of Species.—Allusion has already been made to the general wide geograhical range of species belonging to the temperate regions of the northern hemisphere, and examples given to illustrate this truth. On the other hand, in New Zealand, for example, we found that a large proportion of the species are endemic, whereas not one is endemic in the United Kingdom; and many of what we may call northern types, including British species, besides having a wide range in temperate Europe, Asia, and America, also occur in the mountains of tropical Asia and Africa, some extending to New Zealand, and a few even down the mountain range of South America. It was not stated there, however, that typically southern types rarely extend to similar climates in the northern hemisphere. Relying upon geological evidence, it would appear that what now are typically southern, temperate, or sub-tropical orders, genera, or species, have gradually receded southwards, or never succeeded in obtaining a permanent footing in the north, though this does not imply that they were ever so fully represented in the northern hemisphere as they are at the present time in the southern, where they possibly always found their maximum development. Taking the Proteaceæ for illustration, the existing range and centres of concentration of the members of this Order are eminently southern. Further particulars on this point are given in the remarks on the vegetation of South Africa, Australia, &c. Nearly all the species have a very limited range in the countries in which they occur, and the genera are also for the greater part confined to one country. Helicia, however, is an exception. This genus is represented by four species in Australia, and extends through the Malayan Archipelago to India and Japan. In Africa the genus Protea numbers sixty species, and one is

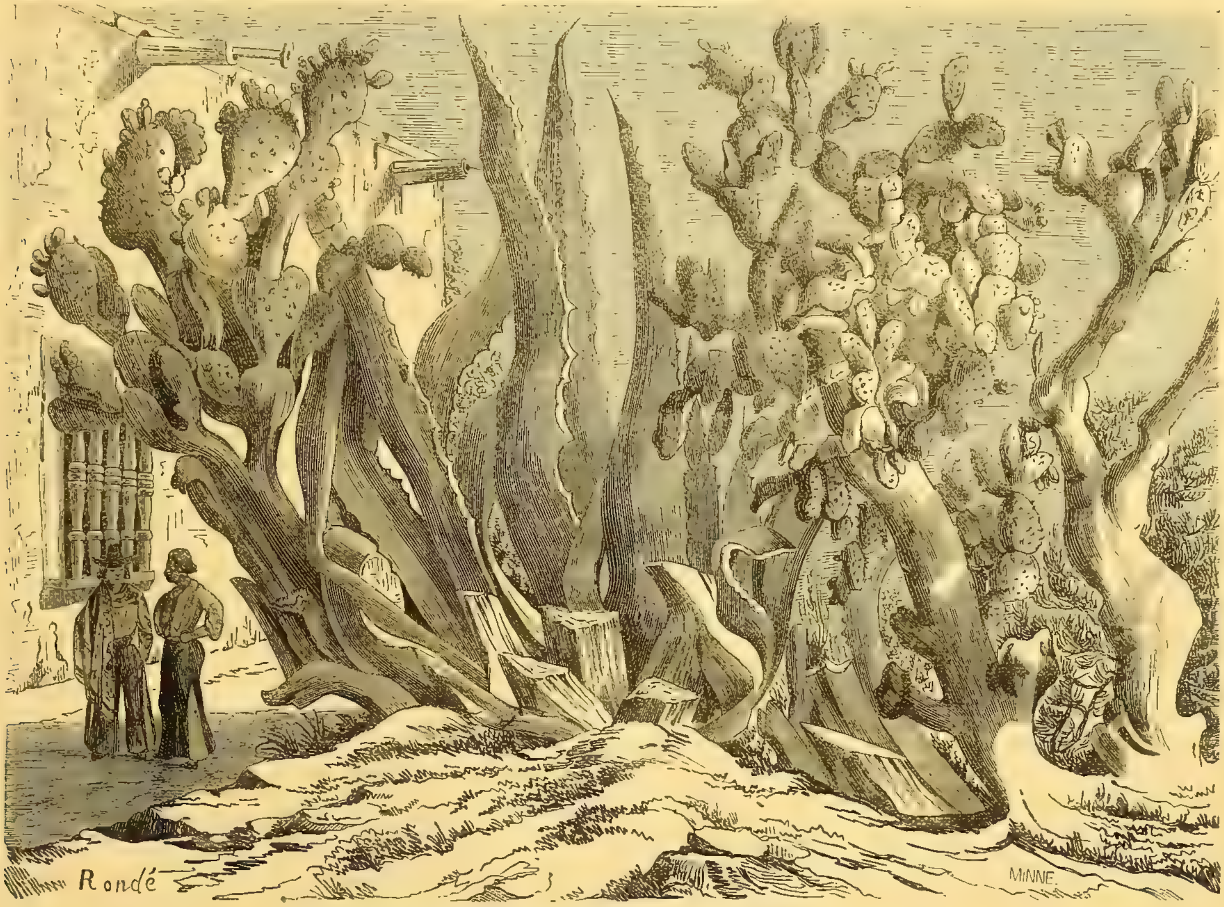
The Cotton Plant.

found in Abyssinia; and Rhopala reaches the northern limit of the family in South America in Guiana. Finally, there are European fossil remains which are referred to this family by palæontologists. Broadly speaking, the species constituting the vegetation of sub-tropical countries, both in the northern and southern hemispheres, are very much circumscribed in their distribution; particularly those of the southern countries.

Extent and Number of Species.—With an area of nearly 20,000,000 square miles, the temperate and frigid regions combined, support an indigenous vegetation of only about 25,000 species; and, in any given area, the number is small, when compared with the composition of the flora of the fertile parts of Australia and South Africa. The sub-tropical regions cover about 13,000,000 square miles, 4,000,000, at least, of which are barren deserts; and the total number of species is computed at from 40,000 to 45,000. Without making some careful and laborious calculations, it would be unsafe to assert that there is a greater concentration of species in some sub-tropical countries than in any tropical regions; but there can be little doubt on this point. For instance, the area of Cape Colony, South Africa, is given as 200,000 square miles, and the flora is estimated at about 9,000 species.

Historical.—Little more than a century ago, scarcely anything was known of this enormous floral wealth in Europe. A few Cape plants were introduced early in the eighteenth century, among them a few species of Pelargonium, Mesembryanthemum, and Erica; but it was not till about the year 1774 that this mine was really opened. After that date, and up till about 1820, with certain intermissions, the flow of new bulbous-rooted and hard-wooded plants from the southern hemisphere was almost incessant. It then began to decline, and finally almost ceased, and now probably not a third of the species are in the gardens of this country, although there has lately been a little revival in the cultivation of the beautiful flowering shrubs of the Cape and Australia. For many years past collectors of living plants have been mainly engaged in ransacking the mountain forests of America, and innumerable Orchids, Aroids, Begonias, Bromeliaceæ, Palms, &c., have formed the bulk of the spoil. The countries from which we have obtained the principal part of our greenhouse plants are Australia, South Africa, and Mexico, with smaller contributions from the mountains of the northern part of South America, and of India, the southern part of China and Chili. The greater part of the Mediterranean region is really sub-tropical in its climate, but so few Mediterranean plants are sheltered in our greenhouses, that it may be left out of consideration under this head, especially as it is one of the regions of our hardy plants.

W. B. Hemsley.



Geographical Distribution of Garden Plants: Succulent Plants in Mexico.

YOUNG PLANTS IN POOR SOIL.

Some believe that rich soil is the chief requirement of a large number of our garden plants; it is in every case necessary to give wholesome food, but in the early stages of plant growth, very rich soil is not required until sufficient roots have been made to absorb the manure. It is often the case when soil is very poor, that the pots in which the plants are growing are filled with roots, whilst little or no foliage has been produced. Place the roots of that plant where they can have their fill, and it will be seen what advantage plenty of fibres has over large, thong-like roots; sturdy growth and flowering wood is the result. Often does a Vine in a pot make a growth like a straw, and if the pot be inverted, and the roots turned out, the whole ball is a firm mass of fibre! On the other hand, one may have a Vine having fine growth, luxuriant foliage, strong wood, and probably with a large amount of pith. Examine the roots of that plant, and they will generally be found to be long, rank feeders growing thinly through the soil; but the difference between the two forms of roots is the former keep on extending themselves through the soil, finding little to draw up into the plant to give it bulk, but growing and increasing in numbers, finding little till the whole space is occupied. We have more than once lifted Vines and Peaches, and though the border was matted throughout there was a very small proportion of wood on either, yet they bore exceedingly fine fruit and took plenty of liquid manure. Figs, I have often seen the same, and no amount of liquid manure would induce growth beyond a few inches which were each season covered with fruit of unusually large size. I would suppose that when Mr. Thomson made that good hit at Dalkeith, of using sand in narrow strips at intervals through his Vine borders in a perpendicular direction, it was to arrest the rapid progress of the large roots; when they came in contact with the sand a large amount of fibres was thrown out which would draw up large quantities of food from the rich soil as soon as they passed through the sand. A saving of border space would be effected at the same time. Fibres drawing up rich food to a plant, and gross roots doing the same, is attended by very opposite results, the former having a tendency to give constitution and provide fruit or flowers, while the latter caters for wood, pith, and foliage only. I remember well, when a youth, employed in the establishment of the late Mr. Catleugh, at Chelsea, that his system of growing Pelargoniums for market (his quota sent for sale to Covent Garden was 30,000 a year), consisted in starting his plants in sandy loam without manure, and that when placed in their flowering pots rich soil was given them. The first secured plenty of fibres. He then allowed them to consume as much as they were able. Stronger plants and finer flowered I have never seen of that class. During the present season we were obliged to use very poor soil for everything, because we had no other. Every pot became crammed with fibres, but not much top growth was to be seen. Since then these plants have had good soil, and those of them which are flowering now are doing extra well. Euphorbias flowering are making shoots like quills; Bougainvilleas are flowering on every inch of growth; and Neriums, Cytisus, Habrothamnus, and many others are doing the same. M. Temple.

Rendle's System of Glazing.—The present system of glazing horticultural buildings is an endless source of expense and annoyance. What is required in either a plant or fruit house is a waterproof roof, and this is rarely obtained under the old system of glazing. Putty is a very perishable material when exposed to the weather, and the smallest crack or flaw lets in a stream of water. When squares of glass are fitted tightly and putted down closely, fractures often take place on account of the inelasticity or non-yielding nature of the three substances brought into immediate contact. Sometimes the putty cracks and gives way under the pressure of wind, or the expansion and contractions caused by changes of temperature, and many squares of glass are cracked, and thus let in drip. The painting and repairs of glass houses also form a very heavy item in garden expenditure, and any system of construction that will reduce it without any sacrifice of efficiency, must, in the long run, succeed. Although there may not be much saving in the first outlay, yet any one will easily understand that where no putty is used, or any other perishable substance exposed to the weather, the cost of maintainance must be very considerably reduced. Then, again, the elastic bed on which the glass rests prevents, in the ordinary course, many fractures. The jar of a door, or a large hailstone falling on a tightly-packed square of glass may crack or fracture it, whilst glass used on Rendle's system, that will yield under a blow, is endowed with greater resisting power. Among other places where I have seen the system carried out, I may notice a large Vinery at Burghley, on which a new roof on this principle has been erected. Mr. Gilbert speaks very highly of it, not only as to its freedom from drip, but as regards the less liability to fracture; and I think no one can thoroughly examine the system without becoming convinced of its comparative cheapness and durability.—E. Hobday.

THE CHRISTMAS ROSE.

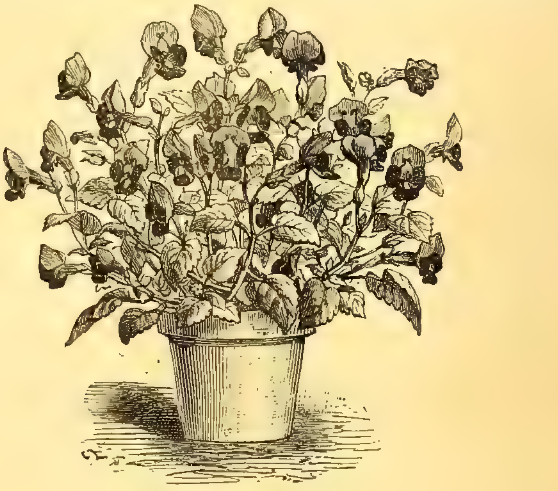
Brown leaves and batter'd, move them aside, and lo!
A paleness, purer than the circling snow,
A treasure trove of fairest flow'rs below;
White waxen petals, yet thereon faint flush
Of conscious life, a warm and beauteous blush.
The wild wind sweepeth o'er with sudden rush.
They crouch so low, he finds them not, and so,
With golden stamens nestling in their snow,
They lie unharm'd, the sheltering leaves below.
O! Roses, thornless Roses! such as ye
Our floral off'ring Christmas morn shall be.

L. Walen.

PLATE CVII.

TORENIA FOURNIERI.

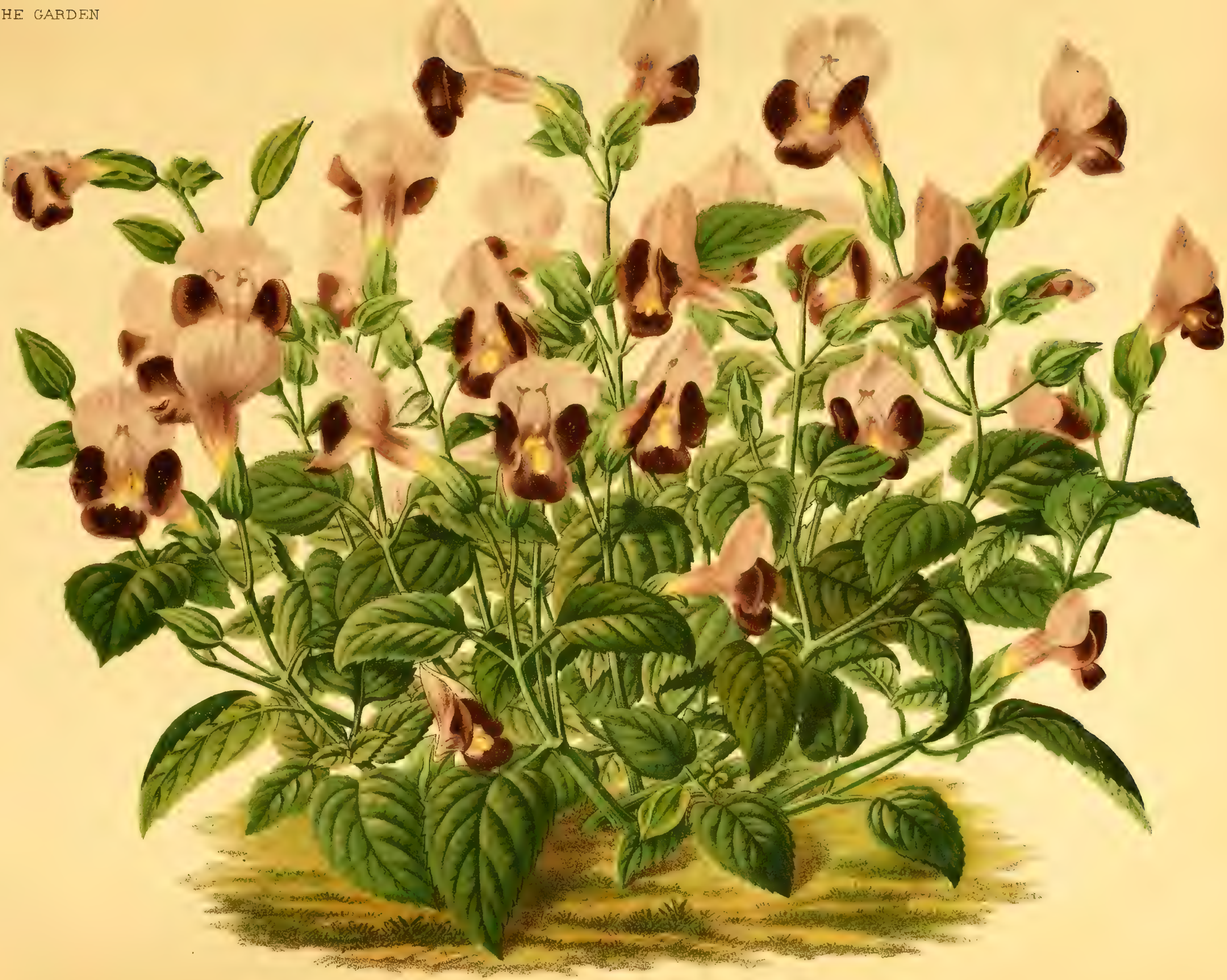
This is a valuable addition to our indoor gardens, bearing numerous pretty blossoms, and being neat and graceful in form. Our hothouses rarely produced more beautiful objects than well-grown plants of the old Torenia asiatica, with its shoots flung down in graceful profusion, and its numerous pretty flowers. At first it was scarcely hoped that the new comer would quite equal the old plant as a stove ornament, but Mr. Barron placed the old and new species alternately in baskets this year, and proved T. Fournieri to be in all ways equal to T. asiatica, and yet distinct from it. It is charming as a basket plant in a warm house. It is a native of Cochin China, where, M. Godefroy Lebœuf informs us, it is a common little plant in the priests' gardens. Our plant is reproduced from a drawing kindly lent us by Messrs. Vilmorin, of Paris, where the plant is sometimes tried out-of-doors. It is, however, much freer and happier in a warm house. It is easily raised from seed or cuttings, and is of facile culture.



Torenia Fournieri.

STORING SPINACH IN A COLD COUNTRY.

Numerous have been the means adopted by gardeners to save Spinach for winter use. Heeling-in in a dry place, just before hard weather sets in (something after the plan adopted for Celery), and roofing over, secure from hard frost, was long since one of the means used by cultivators. Laying rails or poles between the rows and covering with litter is another. How to save it, the Massachusetts "Ploughman" relates in a late issue, as practised by market gardeners about Boston. To keep Spinach, it is only needful to cut it on a dry day, about November 10 or 15, and pile it about 6 in. deep upon shelves in a cellar provided with ventilators, so as to be able to keep the temperature as near as may be 32°. The cellar is usually built on purpose in the large gardens, where 1000 bushels or more are stored. An excavation, 20 ft. by 30 ft., is made 6 ft. deep, and walled up at the sides and covered in with a roof of boards and shingles, with a door at one end. Two paths or alleys run the length of the cellar 2 ft. wide, and a shelving of 6-in. boards, with air spaces of 1 in. between, are built up on each side of the alleys; the space between the shelves is 14 in. The cellar should be provided with two or three ventilators of Pine boards 6 in. square, extending from near the floor to a height of several feet above the roof; these are kept open in moderate weather, closed in a very severe cold spell, or in a thaw, the object being to keep the temperature as near 32° as may be. The roof and ends of the pit are covered over with litter of any available kind, to exclude frost. Spinach will keep very well in cold dry weather, in a cellar like this with little waste; but if a warm open spell of weather occurs, it is very likely to decay and spoil. By modifying the conditions for preservation, Parsley, Lettuce, Endive, and some other plants of like nature may be easily kept. These modifications will easily suggest themselves to the practical gardener, and in the West, at least, we think the plan may be made to pay.



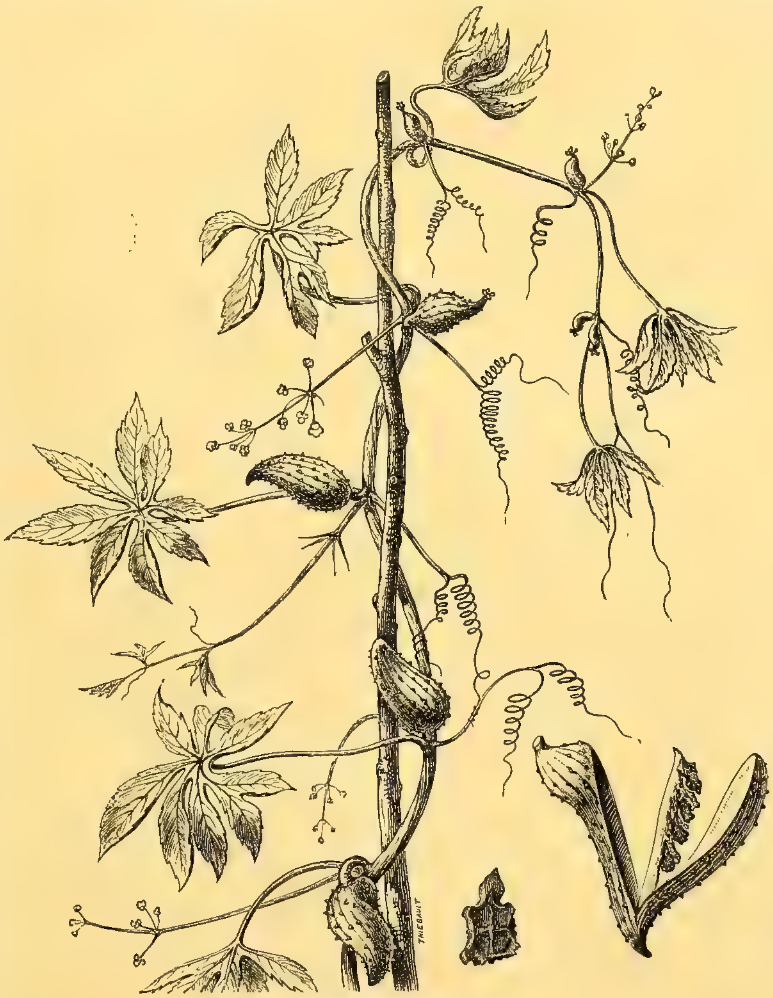
TORENIA FOURNIERI

THE INDOOR GARDEN.

THE DOUBLE POINSETTIA.

Last season I directed attention to the more brilliant shade of colour of this splendid novelty, as well as to the marvellous persistency of its bracts, a single bract continuing in flower, in an intermediate house at a temperature of 55°, from November to May. Another feature, very prominently manifested this season, is a later habit. Plants of this and of the common variety, started together and treated alike, have shown a difference of a month in the time of colouring. P. plenissima is so much the more later than the common type. This has much enhanced its value. Planted abreast, the common P. pulcherrima would be beginning to fade before the supplementary bracts of P. plenissima had made much progress. One of the most valuable features of the latter variety is, also, that the first bracts do not show any tendency to fade or droop when the supplementary ones develop, though these continue to come for several weeks—sometimes a month or two in succession—so that the entire bract or series of bracts continue in beauty to the last. This adds immensely to the gorgeous grandeur of the plants. Its mode of development is also peculiar, and seems to prove this fine variety to be only an improved sort of pulcherrima. It is quite a misnomer to call this a double variety. Those familiar with the old variety have often noticed a few, or many, of the curiously formed yellow flowers producing a scarlet bract from their upper sides. We have had many flowers sport thus towards plenissima this season; for plenissima, when it first developes its lower tier of bracts, seems to rest awhile and consider what more beauty it may be able to add. At this stage, it strongly resembles the common type, only it has more colour on its crown. Gradually the uncertain shape and indeterminate colours are developed and fixed, and few or any scarlet bracts proceed out of the centre overlapping the lower ones, and filling up the centre with scarlet or brilliant vermilion crowns of glory. It is impossible to exaggerate the beauty of well-grown examples of this Poinsettia. The result, however, depends greatly on culture; the number and size of the bracts, as well as perhaps the intensity of their colouring, being very much dependent on the vigour and health of the specimens. Under similar conditions, however, the P. plenissima is several shades brighter than the old pulcherrima. The brightened intensity of colour is so marked here as to be obvious to every one who sees the plants growing together; and it is an additional merit of the highest excellence. The new variety has also a rather more compact habit than the old one. Its greatest merit, however, is the doubled or trebled durability of the bracts, and their constant multiplicity. With Poinsettias continuing in beauty two, three, or more months, our plant stoves need never more know a dead season. It is hardly possible to have a more brilliant antidote to our leaden, frozen, or dripping skies from November to March than an abundant supply of Poinsettia plenissima in our plant stoves, warm conservatories, and warmer window gardens or glass cases. It is well nigh impossible to be melancholy in the presence of such intense brightness and beauty. Depend upon it, there are few better cures for low spirits than a plentiful feast of P. pulcherrima plenissima.

D. T. Fish.



Cyclanthera pedata.

Seedling Ferns Indoors.—Where large quantities of plants are required for indoor decoration, few plants are more serviceable than seedling Ferns, especially the Maiden-hairs and Pteris serrulata and longifolia, all of which are easily raised from seed. We find young plants in 2-in. and 3-in. pots useful for forming a fresh, green groundwork for jardinettes and drawing-room stands, as, should any of them become shabby from the ungenial positions which they are frequently obliged to occupy, they can be readily removed and fresh ones raised; or, if required for growing into larger plants the following season, the whole of the old leaves may be cut off, when a head of fresh, verdant fronds will quickly replace them. Where large specimens of these Ferns are grown, seedlings are usually found springing up abundantly on all moist surfaces, as the seed spores are so light as to be carried and deposited over the whole house. If sown in pans, or on lumps of peat, the seed must not be covered, but merely shaken on the surface, which must be kept constantly moist. The seedlings also enjoy a humid, brisk atmosphere, but when required for decorative purposes they should be gradually inured to a cool and moderately dry atmosphere, so as to harden the fronds and render them capable of withstanding the fluctuations of temperature to which they are invariably exposed. In table decorations small Ferns constitute an important item; where the small pots containing them are enveloped in fresh green Moss, they may be used in a great many different combinations. Some of the freshest and greenest table decorations which we have had this season have been formed exclusively of Ferns on a centre of green baize, on which the candelabra and appendages showed themselves off with excellent effect, while, in the strongly-reflected light, the whole looked as if set on a Grass plot, a bordering of foliage being employed to conceal the limits of the baize. Of the white table cloth only sufficient was visible to accommodate the plate and similar articles. In Covent Garden, Maiden-hair Ferns are in great request for these and other purposes. They are grown in small pots for the most part alone; but sometimes mixed with Tulips and other bulbous plants. Their fronds, too, in a cut state, are so much in demand that long, span-roofed houses are wholly devoted to their growth.—James Groom, *Henham.*

Cyclanthera pedata.—The genus Cyclanthera, belonging to the natural Order Cucurbitaceæ, numbers only seven species, natives of Texas, Mexico, Peru, Ecuador, and other parts of South America. The annexed illustration of pedata will give a good idea of the habit of the plants. This species, which is an annual, is a native of Mexico, and though it has been in cultivation ever since 1831, it is still far from being common in gardens. Its climbing habit makes it particularly suitable for covering walls and palisades, as well as for training over wires or in wreaths, and the unripe fruits can be used as pickles. The leaves, which are pale green, are composed of from eight to nine narrow leaflets. The plant is monœcious, the male flowers being borne in long-stalked panicles, and the females solitary in the axils of the leaves.—J.

TREE OR PERPETUAL FLOWERING CARNATIONS.

How the whole character of these have changed of late years ! and this change may be attributed to two causes, the introduction of a new race, and a better mode of cultivation. When the improved varieties of the new race are more widely distributed, and the better system of culture is more widely known, Tree Carnations will be as frequently seen in plant houses in early spring, as Cinerarias and Chinese Primulas. Let it be remembered that it is the peculiarity of the Tree Carnation to flower in winter and spring. Some suppose that all Carnations are summer-bloomers, and that to have Tree Carnations in spring considerable forcing is required. He who sets himself to grow Tree Carnations must dismiss the idea that they are identical with the summer flowering varieties; he has to deal with a distinct race, essentially different in character, and requiring special treatment. Happily for him, it is an easily managed plant, if only the work be set about in a right manner.

Many will remember the old tall, lanky Tree Carnation of twenty years ago, with a long stem, little grass, and a few flowers at the extreme top. It is now becoming extinct. Now we have dwarf, stocky, free-growing plants, producing an abundance of healthy grass, and throwing up many flower stems bearing bright-coloured fragrant blossoms. This gain is attributable to foreign seed, and Mr. Turner, who has of late paid much attention to Tree Carnations, saw where his opportunity laid, and, by careful selection, has succeeded in raising a number of varieties, showing improvements, not only in the flower, but also in the habit of growth. His new varieties include Rose Perfection, very bright rose, flower large and smooth; Scarlet Defiance, vivid scarlet, fine shape and substance; Lilian's Glory, pale red, bright and effective; Coronation, crimson scarlet, very smooth and distinct; Mr. Fowler, bright rose, very pretty and sweet; Jessica, white, large and full; Guelder Rose, white, full-sized, well-formed flowers; Fairy Queen, white, flaked with rose, distinct and very fine; Sir Garnet Wolseley, buff ground, striped, and edged with bright red, very dwarf, free habit; Tricolor, pale yellow ground, striped with purple and magenta crimson; and a fine new Continental variety, named A. Allegatiere, glowing bright red, very fine and striking, dwarf, free habit. Probably the best portion of the foregoing will be put into circulation in the spring.

A selection of varieties that can be obtained should include Avalanche, white; Caliban, flaked with rose; Congress, bright scarlet; Eclair, dark crimson; Empress of Germany, large white, slightly marked with bright rose; Garibaldi, rosy-scarlet; Hermann Stenger, rose, flamed with cerise; Indian Chief, dark crimson; King of the Belgians, dark rose; Miss Joliffe, pale pink, very fine; Oscar, yellow, large and full; Prince of Orange, a yellow Picotee, edged with crimson; Princess Christian, bright pink fading to peach; Queen of the Belgians, white striped with rose; Rosy Morn, deep rose; and Vulcan, bright red. That a certain dwarfness of habit has been acquired is placed beyond doubt; at the same time, much depends on the proper treatment. I will now proceed to supply a few hints as to the culture of these Carnations.

At this time of the year the plants that are showing for bloom should be in a greenhouse where a little warmth can be given them, and air on all favourable occasions, to keep the atmosphere dry and comfortable. It is a great mistake to suppose that forcing, in the ordinary acceptation of the term, should be applied to these plants; all that is required is a little gentle assistance, nothing more. A dry bottom is necessary, that is to say, the stage on which the plants are standing should not be allowed to become wet, as damp will injure the flowers; in fact, so far affect the unexpanded buds that they decay at that stage and never open. Nor must the soil about the roots be allowed to be get too dry, but kept moderately moist; the foliage must be kept clean and free from green fly, which soon increases during the time the plants are kept close. By means of these simple precautions flowers can be had for a considerable period.

Unlike the ordinary Carnations, which are propagated by means of layers or pipings in summer, the Tree Carnations are increased in early spring by pipings; the young growths put out at the sides of the main stem supply the material out of which cuttings are made. The best time at which to take them is about the end of February or early in March, and strike them in the same manner as Pinks, on a gentle bottom-heat, using a moderately-light, sandy soil, and putting about eight or ten pipings in a 4-in. pot, giving them a good watering as soon as inserted. When properly treated, the cuttings will strike root in about three weeks or so; they should then be potted singly into middle 60-sized pots, and again placed in a gentle warmth, and when well established, hardened off, and then repotted into 48-sized pots, or a larger size, according to the strength of the plants. By the time this stage of the cultural process is reached, the plants may be placed out-of-doors on a layer of cinder ashes, and be kept well watered during the summer months, and as the main shoots increase in length, they should be properly and securely tied out to stakes, as they are liable to be swayed about and broken off by the wind. Those who are about to begin growing Tree Carnations would do well to obtain the plants now or in September, and then, by following the directions above given, a successful blooming season might be looked for. D.

FLOWER GARDENS UNDER GLASS.

The year that is now closing is likely to live in the memories of all who have had anything to do with gardening. From a commencement unseasonably and unusually mild, the year advanced into a cold and blighting spring, to be succeeded by a summer so wet, bleak, and sunless, that, in these respects, it has not been equalled for half a century; but for a month of fine weather—from the second week of September to about the same period in October—the whole year would have been one of unbroken damp and cold gloom, for hitherto the autumn and winter have been no improvement on the summer. Possibly these remarks apply to the weather experienced in the northern half of the kingdom more fully than to the south, where, perhaps, the extreme sunlessness was not fully experienced. It is not easy or pleasant to attempt a forecast of what may be the effect of such a year on the products of the one that is to follow. Our impression is, that in consequence of the fine, dry month referred to above, before the sun lost its ripening power, fruit-bearing trees are much better ripened and prepared for the succeeding crop than was at one time expected—all the more so, owing to the scanty crops borne by them this year; so that it is reasonable to hope for better crops next season, should the spring and early summer be propitious. But there lies the uncertainty that may dispel the best of hopes and the most skilful and indefatigable efforts. In certain districts no one, from past experience, looks for a full crop from most of our hardy fruit trees oftener than once in four or five years. We have, not very long ago, directed attention, if that had been necessary, to the uncertainty and unprofitableness of growing such fruits as Peaches and Nectarines in many districts without the protection of glass. Fortunately, this fact has been recognised and acted upon to a very considerable extent, and results have justified the extensive erection of orchard-houses and glass coverings for walls. It is now also recognised that if flower gardening with tender plants is to be successfully carried out in a great many districts, without as many blanks as prizes in a series of years, some such means must be taken, to make it a matter of certainty, and satisfaction, as have been adopted in the case of fruits. If anything is more apparent in the gardening press, as well as through other mediums, it is that there is a deeply-felt disappointment with tender-flower gardening. A day's rain washes it out, and a night's frost lays it low—a mass of corruption, very often, before it has come to its best.

A few Peach trees and a few Plum trees, &c., under glass, are found to yield three times as many, and better fruit, in the course of a decade, than was ever hoped for on the open wall; and the trees continue to live in good health, without being cripped, and half-killed most springs. Just in like manner a much fewer number of tender-flowering plants under glass yield five times the quantity of fine fresh perfect blooms in a season that they do out-of-doors. This is no mere conjecture; it can be regarded as an absolute certainty. In very many localities, at least 5000 plants under the protection of glass will give far more blooms than four times that number during the vicissitudes of the few weeks thay can be risked out-doors. In fact, in too many cases it leads to eight month's nursing of the plants for the uncertainty of three or four months' bloom, even in the most favoured districts. We know of no more fruitless effort in the whole round of gardening than to attempt in many localities tender-flower gardening out-of-doors. Of course it may be hard to give up, in such places, what is so fashionable, and so gay and telling for a month or two, in others. We are convinced, however, that such a course would in the end be less expensive, less laborious, and much more pleasure-giving, and vastly more favourable to the true science of gardening, if open-air borders were filled with selections of hardy perennials and shrubs, and if such plants as our now beautiful Pelargoniums, and the tender host associated with them, were grown in much less numbers under the protection of a glass roof. Not only would they then be enjoyed in all their untarnished beauty from early summer until winter, but think of the number of varieties of plants which cannot be planted out-doors that could be arranged along with them!

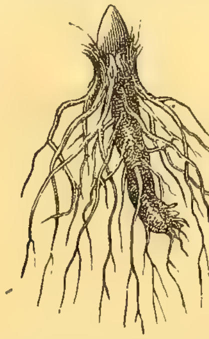
It may be said, "Oh, we have conservatories already." Certainly we have, such as they are; in most cases places, in the first instance, for spoiling plants, and putting them out of bloom and out of health in the shortest possible time. In too many instances conservatories are conglomerations of plants huddled together, with next to no design, and of huge glaring pots and bare stone surfaces, altogether as artificial and devoid of elegance as it is possible to make them. If ever the idea we are advocating be carried out, as it ought, and can be, it must be in lower, lighter, and less expensive structures, though not on these accounts less elegant. The varieties of plants that could be introduced, and the scenes that could be created under a glass roof from year's end to year's end, would form a striking contrast to our ugly conservatories, and more especially to our degraded and jaded-looking tender plants in the open ground. What is wanted are plants on and in the ground, under the eye, and not so much above—a place of ease and order—with a few creepers and baskets, &c., introduced judiciously, and not to such an extent as to shut out the light from the principal plants and flowers. Scenes of such elegance could be arranged under glass as we have seen nothing of as yet.

But what of the expense and labour it would require to carry out such a revolution as this? We answer, What of the labour and expense of large outdoor parterres, for which tens and hundreds of thousands of tender plants have to be reared and tended and nursed for eight months out of the twelve under glass? And, after all, what of the results in many districts? We argue, that if such parterres were curtailed and planted with hardier, though certainly not less interesting plants, and a more limited number of tender plants were arranged under glass, a few years would soon show that of the two the course we are suggesting would be the cheaper. We are not speaking entirely without experience, for this season we planted 14,000 tender plants in a glass house, which remained in great beauty until far on in November, while hundreds of thousands outdoors were nearly a complete blank. As to the labour these 14,000 plants required, we are speaking within the mark when we say that a man or a lad could do it most weeks in two days a-week. How little really in the average of seasons a tender flower-garden outdoors can be enjoyed in many districts, and how disappointing the finish up of it generally is! What scenes the hand and eye of taste could work out in a greatly less space under glass, varying and changing with the seasons! And when days of rain and cold prevent the enjoyment of the shattered remnants of a garden outdoors planted with tender things, what a charming retreat and pleasure the garden under glass would be to the healthy and the ailing alike! And what a contrast and wholesome change from the hardy border plants outside to the glowing beauty and colours of those in the glass-garden! We are confident that it only requires a few with spirit and taste enough to set a good example, to inaugurate a step in a direction like this, which could not but prove a never-failing source of delight to lovers of flowers.—"The Gardener."

Forcing Eucharis amazonica.—At all seasons of the year, this beautiful Amaryllid may be had in flower where a sufficient number of plants exist to form a succession. Market gardeners near London grow it in quantity, and its pure white, sweetly-scented flowers are always valuable. They place the bulk of their plants in a cool house, and keep them dry at the roots. A few dozens at a time are then removed to a warmer temperature, plunged in bottom-heat, and well supplied with water. In a few weeks afterwards the flower-stems show themselves, and, when fully developed, the plants are placed in rather cooler quarters, to open their blossoms. After flowering, they are again placed in their former quarters, in order that they may have a season of rest. In this way a good succession of flowers is kept up, and sometimes the same plants are flowered twice a year. Repotting is not, however, practised oftener than is absolutely necessary, as, unless the plants are kept somewhat pot-bound, they do not flower so satisfactorily. Manure-water, applied during the growing season, is productive of better results than frequent shifting or disturbing the roots. Some growers—Mr. Ladds, of Bexley Heath, for instance—have houses occupied by Eucharis planted out in beds. This method is a good one where space can be commanded; but where the most has to be made of the house-room available, pot culture is preferable. Mr. Denning, of Norbiton, also has a house planted with Eucharis. Under such circumstances the plants make remarkable growth, and furnish a rich harvest of flowers during the dull months of winter, when mostly wanted. Pancratiums are also now largely grown by florists for the sake of their sweetly-scented blossoms, which are much prized for the centres of bouquets. They are treated in a similar manner to the Eucharis. —C. W. S.

—— We grow the Eucharis amazonica largely both for decoration in the form of plants and for cut bloom; and, after trying it both with bottom-heat and without it, I have come to the conclusion that bottom-heat in its case is superfluous. This year we have grown and flowered an entire stock of it thus far without plunging the pots or even standing the plants on bottom-heat, and I never remember having had such a continuous or good supply of flowers before. My reasons for discontinuing the practice of plunging the pots was, that on examining the roots of those that had been plunged I found them frequently in a decayed condition, even when the heat employed was of the mildest character; and plants removed from bottom-heat for decorative purposes invariably flagged, and did not retain their blossoms in perfection near so long as those that had not been subjected to the plunging process. I find, in short, that the roots of most plants are more sensitive of changes of temperature than the stems or foliage; I now observe that our plants have retained their fleshy roots in excellent condition, and that they have thereby been enabled to carry a fine crop of flowers, which under cool treatment have retained their beauty for a long period. I may mention that we grow the majority of our Eucharis in 3 in. pots, one good bulb producing with certainty a fine spike of four or five flowers. Large specimen pots full of bulbs are beautiful objects for large vases; but where quantities of bloom are required at given dates, single bulbs in small pots full of roots are the ones on which to rely for certainty of supply.—James Groom, *Henham.*

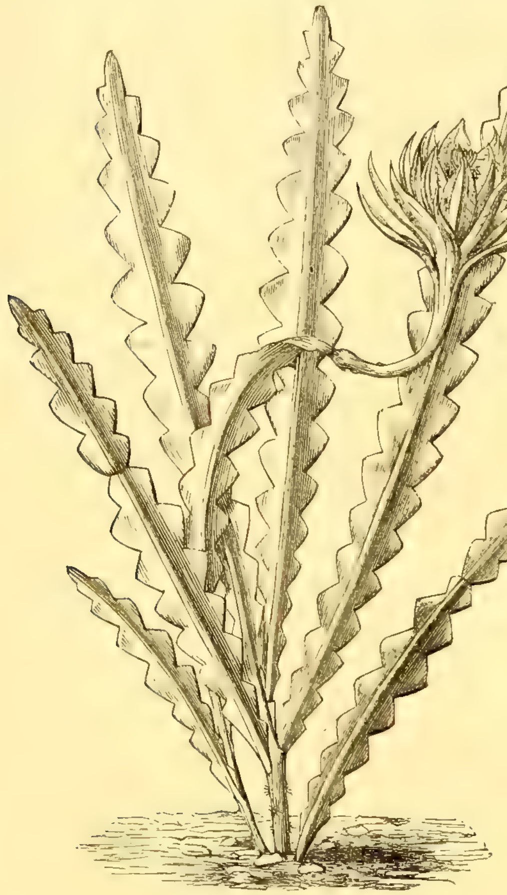
Lily of the Valley for Market.—Whether as a pot plant, or in the form of cut blooms, the Lily of the Valley is always a favourite, especially at Christmas, when the demand for it being great, it realises high prices; therefore, during the last few years, florists have forced it in large quantities. The single crowns, which are imported from Holland early in the season, usually supply the earliest flowers. They consist of various crowns, such as that represented by the accompanying woodcut, all of which are nearly certain to flower, and they will bear more rapid forcing than perhaps any other plant. As they are imported without any soil attached to them, numbers of them can be placed in a small space, and house room is thus economised. A bed of Cocoa-nut fibre, or other light material, is made for them, under which there is a strong bottom-heat; they are planted thickly in the fibre a month or so before they are wanted to flower. When the blossoms begin to show themselves, the crowns are potted six or eight together in 5-in. pots, and sometimes a few small Ferns are placed amongst them; they are then well watered, and, as the flowers expand, they are placed in a little cooler temperature. For later supplies, imported clumps of crowns are used. Market gardeners always cram clumps containing as many crowns as possible in 5-in. pots; they are then plunged in a bottom-heat of from 75° to 80°, and kept well watered with tepid water. When they show bloom, they are thinned out to six or eight in a pot, as a


Single Bulb of Lily of the Valley.

medium-sized potful of plants realises as much money as full potfuls, and the thinnings, when potted, supply cut blooms. Some mix Squills (Scilla sibirica) with their Lily of the Valley, and the two colours combined are very effective. Many tons of roots of Lily of the Valley are used by florists in the neighbourhood of London every year.—S.

PHYLLOCACTUS ANGULIGER.

This singular plant, nearly allied to the old Epiphyllums, as they are often called, is not a very strong grower; but it is interesting even when out of flower, on account of its regular saw-like margins. Its flowers are not produced so profusely as in some others of the genus, but an additional value attaches to them, on account of their being produced in winter, generally about Christmas. They are white, and owing to the length of their tube, they are useful for bouquet-making. This species likes rather more heat than its fellows; therefore it may be kept, during winter, in a dry corner of a stove; but it will live even in a greenhouse. In its native habitat it is an epiphyte; therefore, it will succeed as a basket plant in peat.



J. Croucher.

Forcing Cinerarias.—The Cineraria is the most ticklish subject to force with which I am acquainted. It really should not be forced; but at the dead season of the year the buds make little or no progress in a cool temperature, such as suits the plants otherwise. Of course, it is perfectly useless attempting to force the Cineraria if the buds be not well formed and just about to expand, at which stage they will stand for months if not assisted with a little heat. A temperature of from 50° to 55° is high enough, however, and the plants should be placed on a shelf, away from hot pipes, and with their tops quite close to the glass, where they will get every ray of sunshine. One good sunny day will do more to open the flowers than a week's forcing; and once the flowers are out, the plants should be at once moved into a perfectly cool structure, safe from frost, as, if they be kept long in the forcing house, they usually either fall a prey to green fly or lose their foliage. At all times they should have plenty of water at the root, and if the pots can be set on sand or on a flag or slate bottom, all the better.—C.

ORCHIDS.

SEASONABLE NOTES.

Terrestrial Orchids.—Some of these force well, especially Cypripedium spectable. I would therefore recommend those who have a good stock of it to at once place some few plants of it in gentle heat, and those who do not possess it should at once add it to their collections. Its charming flowers are welcome at all seasons; but especially so in winter. The large purple-flowered C. macranthum, although somewhat rarer, and the yellow C. parviflorum, also force well.

Dendrobes.—D. heterocarpum is a plant which varies much in colour; all the varieties of it, however, deserve attention on account of the exquisite odour of Violets which their flowers possess. They are opening now, and will continue to do so for a long time yet to come. This species will succeed either under pot culture or upon a block, whichever may be most convenient to the cultivator. D. Linawianum, better known by the erroneous name of D. moniliforme, is now finely in bloom. It is a plant which should be in every collection, however small, for its cheerful rosy-cerise flowers have few equals at this season. It is easily accommodated, and should be grown in a pot. D. Pierardi, although one of our oldest acquaintances, is still a welcome winter and spring-blooming Orchid. Its flowers, which are produced in great abundance, are white, tinged with lilac. It should be grown in a basket. D. chrysanthum, although rather short-lived, forms a good companion to the last-mentioned species. It has rich golden flowers, heavily blotched on the lip with black. It should also be grown in a basket, as its pseudo-bulbs are pendulous.

Odontoglossum cirrhosum.—This promises to become an all-the-year-round bloomer, and the beautiful outline and colour of its flowers will cause it to stand in the first rank amongst Odontoglossums, popular though the genus is. Some plants of O. cirrhosum are now in full beauty, and others have spikes in various stages of development; therefore, a prolonged display may be expected. It moreover appears to conform to the coolest treatment, which is an additional recommendation.

Phalænopsids require both heat and care, in order to insure healthy growth and fine flowers, and the extraordinary beauty of their large moth-like blooms well repays any extra attention which may be bestowed upon them. The species now in flower are P. grandiflora and P. amabilis, both pure white, but the former a little stained with yellow in the lip, the latter being similarly marked with rosy-pink. P. Schilleriana, with its grey-banded leaves and large, branching spikes of mauve-coloured flowers, is always amongst the most attractive of winter and spring blooming plants.

Lælia albida.—This forms a good companion to the more robust L. autumnalis mentioned a few weeks back; its sepals and petals are white (in some varieties tinged with mauve), and the lip pink and yellow.

Cymbidium giganteum.—This, it is true, cannot be recommended to those who have but limited space and small houses, but it should always be grown in large collections. It is a plant generally much neglected, but its bold habit of growth and large purplish flowers (which are produced on erect spikes) render it both attractive and imposing. C. Hookerianum very much resembles it, but the flowers are more or less streaked and blotched with greenish-yellow. Both may be grown in a cool house; they require some turfy loam added to the soil. W. H. G.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Sarracenia Drummondi alba.—A fine specimen of this Huntsman's Cup may now be seen in Mr. Williams' nursery, at Holloway. It bears nearly twenty trumpet-shaped pitchers or cups which are of a transparent white colour, veined with purple, and highly interesting as well as ornamental.—S.

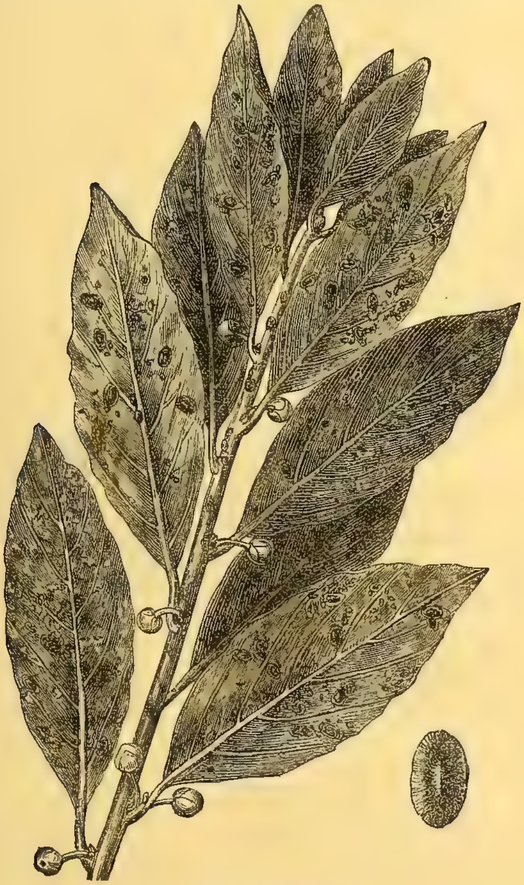
Suspended Pans for Crotons.—Nearly all fine-foliaged plants require as much sun and light as can be given them, in order to bring out their true colours, and especially is this the case with Crotons. An excellent plan by which this end can be attained in the case of small plants is to place them in suspended pans over the pathways; in this way neat, bushy, well-coloured plants are obtained, space is economised, and the house itself is rendered more attractive.—S.

Adiantum princeps—This is one of the most ornamental of Ferns. It has long, graceful, branching fronds and elegant pinnæ, almost as large as those of A. farleyense. It is best suited for a stove or intermediate house, but during summer plants of it grown in 6-in. pots make admirable subjects for room decoration.—C. S.

THE ORANGE TREE SCALE.

Lecanium hesperidum, Linn.; var Lauri, Boisd. (Chermes Lauri, Bouché.

This species is well known in the south of Europe as the Orange tree bug or the Orange tree louse. Nor is it unfrequent in the conservatories of this country, being often imported on various hothouse plants, to which it has strayed from the Orange tree, or on the Orange tree plants themselves. It spreads easily, and, in houses that are at all neglected, speedily establishes itself, its habit of wandering to many plants rendering it more difficult to eradicate. When imported into other climates suited for it, it soon becomes a permanent scourge. In California, for example (into which it has been introduced from Europe), it has multiplied in such enormous quantities as seriously to interfere with the prosperity of the Orange tree plantations, of which many have been formed in that country.


Orange tree Scale.

In appearance it is flat, elongate, oval, twice as long as broad, varying in size from 2 to 4 millimetres; yellow, of lighter or darker shade, with some brown blotches; dorsal disc smooth, with a very sparse and scattered punctuation; antennæ with the fourth joint longest; legs long and thin; the tibia a quarter longer than the tarsus. In the larval stage it is very long, and the antennæ have only six joints; in the adult stage they have seven, like some other species of this group. It is right to add, by way of reminder to the reader, that the number of joints in the antennæ is not a generic character, for it varies in different species, some having eight joints, others seven, and others six. Boisduval says that when the female has finished laying, a great number of eggs are to be seen under the envelope, reposing softly on a whitish down. This is probably an error, arising from mistaking some species of Pulvinaria for it, for it appears to be a viveparous species. Dr. Signoret has stated that:—"If we examine a female arrived at its most advanced stage, and turn her up, it is not rare to see on the abdomen a point where mortification has commenced, through which the embryonal larvæ have passed, *for we have never seen eggs laid by her*." When the young appear, they move about here and there on the leaves before fixing themselves; they keep by preference on the under side of the leaves (although some individuals may also be often found on the upper side), placed in a line along the midrib; but it is particularly on the young branches that they are to be met with in the greatest quantity. When they are abundant, they occasion a great loss of sap, which exhausts the trees, especially those which, from any cause, may be already languishing. So much so, that Boisduval mentions having seen tubs containing Orange trees, in which the earth was actually wet from the sap that fell like dew upon its surface. This varnishes the leaves with a honeyed, sticky substance, which attracts ants and other insects. In that state the leaves, which are as yet not fully developed, become sickly and predisposed to the attack of a black mucedo (the fumagine, or morphea of the Italians) a fungoid growth which resembles a coating of soot, and is described by Persoon under the name of Fumago citri. Seen under the microscope, it looks like an immense forest of interlacing branches. In the environs of Nice and Cannes this affection very often extends to the fruit itself, of which it arrests the development. It is said that this black mould is never observed on any plants but those that have been injured by some coccid or other, and it is very curious that it equally appears on those that have been injured in other countries, as in California, from which we have received leaves covered with the fumagine.

All kinds of the Orange tribe are subject to the attacks of this insect, and although it is chiefly found upon them, whether in the hot-house or the open air, it is not confined to them, but also extends to many other plants growing in their neighbourhood. M. Boisduval mentions having found it upon all kinds of Myrtaceæ, on Pomegranates, Magnolias, Hibiscus and other Malvaceæ. The common Laurel (Laurus nobilis) is another plant on which it fastens, and on which it undergoes some slight modification, sufficient to have induced M. Boisduval to characterise as a distinct species, under the name of Lecanium lauri. It seems to us, however, not to be entitled to rank as a distinct species, but to be merely a variety caused by altered conditions of life, and we therefore treat it as such, not separating it absolutely as distinct, but marking it as a recognised variety. In this connection, our readers do not need to be told that many species of scale insect are confined to one species of plant—others wander from their natural food plant to any that may be found in their neighbourhood, others again only wander to allied plants, some wander but do not settle, and others actually fix themselves on a variety of plants. The consequence, however, of the usual habit of the majority of insects being to fix themselves on one specified plant has been to induce observers, when they find a species on different plants, to too often jump to the conclusion that each plant must bear a distinct species, especially if they can find some slight variegation or modification in its colour or appearance, a modification which, however, in all animals is often the consequence of changed conditions of life, and which, therefore, is not absolutely or invariably entitled to the importance which is occasionally attached to it. Although not sound on all points of the Darwinian gospel, I am sufficiently so on the cardinal doctrine of altered condition of life being one of the most potent causes of modification of structure to quite accept the individuals bearing such modifications as good species, always provided that the alteration is permanent. A single individual, however, shifting its peculiarities back and forward, according to its change of ground, does not become a new species each time it does so, and such, I apprehend, is the case with Lecanium hesperidum as it moves backwards and forwards from Orange tree to Laurel. The alterations it undergoes, moreover, are not very material in kind, and not greater in degree, than we are accustomed to meet with in other insects, which we do not assume on that account to be new species.

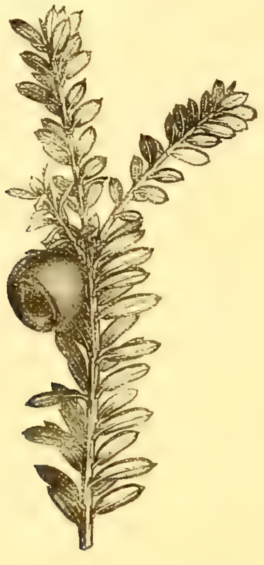
The best plan of keeping Orange trees from these insects, whether one species or two, as well as from the fumagine which follows its attack, is to take care to keep them in good health, to see that they are not left in exhausted soil, to give them sufficient nourishment at the proper time, and in the proper way to wash and clean them in spring and autumn with a brush so as to clear away any of the insects that may be about them, and generally to cultivate them according to the rules of good horticulture. When strong and healthy they are less liable to be attacked by the insect, and, if they should be, they are more able to withstand their attacks.

Andrew Murray.

TREES AND SHRUBS.

YEWS, ENGLISH AND JAPANESE.

When on a visit lately, to Darley Dale, near Matlock, I had the pleasure of seeing in the grave yard there a large Yew, said by the natives to be 2,000 years old, more or less. It has a straight regular trunk for about 8 ft. from the ground, at which height it divides into six or seven large limbs, two of which are erect, the others spreading horizontally. The trunk, which is hollow, is 33 ft. in circumference. This wonderful plant is certainly one of the oldest living representatives, in Britain, of those Taxaceous plants which, early in the world's history, adorned the hills of the Devonian Epoch. With a berry-bearing twig of this venerable Yew, and another, much younger, before me, I fail to find that the English Yew has altered in character during all these years. Time, however, when not associated with altered conditions of life, cannot possibly have any influence in producing structural variation in plants. The forms of the genus Taxus do not appear to be very well defined, and we have a suspicion that their geographical distribution, which is somewhat extensive, has had great weight with species-mongers. It takes no very liberal description to cover the characters of all, and even the more distinct forms cross freely with the English Yew. Several of the garden varieties of the English Yew differ much more from the typical form than do any of the other so-called species. There are few men, I venture to say, who could distinguish the so-called species one from the other; they might find in them homely individuals of the handsome English Yew, but, probably, nothing more, and while the latter has accidentally, or otherwise, given to us so many distinct, curious, and beautiful varieties, several of which were enumerated and described in The Garden of December 1 (see p. 520), planters can very well dispense with all the other natives of foreign climes—well, with perhaps one exception, the T. tardiva (syn. adpressa) of Japan, a berry-bearing twig of which is herein illustrated.



Taxus tardiva (adpressa).

The most distinctive features of this Yew are the shape and size of its leaves, which are naturally represented in the engraving. All plants that I have seen of this were females, and either from cuttings, layers, or grafts. When allowed to grow naturally, it has a short stem, and a dense, depressed, wide-spreading head, with all its short, flattened branchlets recurved. In this way it seldom attains to more than 10 ft. in height, but frequently to 15 ft. in diameter of head. It is very ornamental when in berry and looks at home in an extensive rockery, and also when viewed from above. When trained as a pyramid, as is frequently done by tying the branches to a central stake, it forms a handsome, and not a too formal, evergreen. It crosses freely with the English Yew, and two or more distinct varieties are the result, one of which is called stricta. It differs from the mother plant in having numerous erect branches, sparsely covered with spreading branchlets, and in having a little longer leaves. There is also a variegated variety characterised by a few of its branchlets and leaves being straw-coloured. There are others, variegated in the way of the old golden Yew, but not yet in commerce. G. Syme.

CALLICARPA GRACILIS.

This ornamental berry-bearing shrub, often called C. purpurea, is in autumn, one of our most decorative hardy plants. It belongs to the Verbena family, and is a native of Japan. Its flowers are small, delicate, pale-purple, and arranged in axillary cymes all along the branches and branchlets of the current year's growth. Those cymes nearest the base of the branches open first—usually early in August—and are regularly succeeded by the others towards the apex, till by the middle of October all have bloomed. The flowers are immediately succeeded by a crop of very small berries, the more advanced of which, by the end of September, assume a bright lilac-purple or amethyst colour, which is gradually communicated to all the berries as they advance in growth, and in which is centred the horticultural attraction of the plant. By the first week in November the branches are all aglow and continue so till sharp frosts end their beauty; a slight frost does not injure them perceptibly. In warmer and more favoured locations than Massachusetts, this shrub will come proportionately earlier into perfection. It is not usually considered hardy in this State, hence it has been discarded even by our nurserymen, and I cannot find it advertised in any of the catalogues that I have got. Consequently, to the exclamations of admiration, and to the queries as to where it can be procured, expressed by visitors here, I can only say: "I do not know; no one seems to have got it." The stems are not hardy but the roots are. We have two fine old plants, on low ground with a clay bottom, and where the frost remains long in spring; and the stems which shoot up in masses in the springtime are killed to the ground the next winter, just like those of the Phlox or Larkspur, and though quite unprotected, year after year, they grow up stronger than before. Now, if all these stems be allowed to grow they will become a weakly mass of Osier-like wythes. worthless in a decorative sense, but I thin four-fifths of them as soon as they are a few inches high, retaining the strongest and erasing the weakest. One thinning will not do, so I have them gone over once or twice again, removing the weaklings. This labour is repaid in semi-spherical bushes, some 3½ ft. high by 7 ft. through, and composed of firm, well-ripened, branchy stems that have ample room but not an inch to spare, and that are covered with tiny flowers in August and September, and in October and November with bright and showy berries.—Wm. Falconer, in "Moore's Rural."

The Lacquer Tree of Japan.—Some interest was recently created in Philadelphia by a letter to the "Public Ledger," by a Japanese gentleman who came to the Centennial, offering to introduce the Lacquer tree and the Lacquer business to Philadelphia. It does not seem well known, says the "Gardeners' Monthly," that our Rhus venenata is so nearly alike botanically to the Lacquer tree of Japan, and its resinous product so similar to that, that it would be worth while to experiment with that before spending money in importing extensively the Japan form. Of this Lacquer tree in Japan a contemporary says:—Six species of Rhus have been observed in Japan, though two of them, R. succedanea and R. vernicifera, are only cultivated, and originally introduced from China. The cultivation of R. vernicifera and the collection of the Lacquer is one of the principal industries of Japan. Some of the villages are completely surrounded by forests of this small tree.

THE DECIDUOUS OR SWAMP CYPRESS.

(TAXODIUM DISTICHUM.)

This ornamental deciduous tree, which is indigenous to North America, occupies vast tracts of land in the southern States, where the soil is deep and rich in vegetable deposits. In such localities, and on the banks of rivers, it often reaches a height of 120 ft., and some of the best specimens grow to 140 ft. high, with proportionately large girths of stem. This so-called Swamp Cypress is considered an important timber tree in North America; the heartwood is of a reddish colour, and, when seasoned, it is light, strong, and durable, although less resinous than any of the Pinus tribe. It is uncertain when this Conifer was imported into England; there are, however, records of good specimens growing in this country 100 years ago. It is quite hardy in the south and western counties; and, when planted in suitable sites, it grows to a moderate-sized tree, though not likely to be of value as a timber tree in England. When planted in thin, poor soils, and on dry, hilly ground, it does not succeed well; indeed, it makes very slow progress in such situations; but, when planted on the banks of running streams, on ornamental islands, or in any sheltered situation where its roots can receive abundance of moisture, it will be found to thrive well. Its habit, when young, is pyramidal, with a thin, spiry top; but, when approaching maturity, its top presents a more flattened appearance, its branches become more widely spreading, and, altogether, it is less formal in outline. When old it is not only graceful on account of its Fern-like foliage, but the ramifications of the branches exhibit a picturesque aspect in winter when destitute of leaves. Another characteristic feature of this tree, too, when growing close to water, is the peculiar growths round the base; these excrescences are mostly hollow, and, on old trees, they are often very large, forming broad, conical knobs; what may be the cause of these malformed protuberences I am unable to say. Apart from the elegant, feathery, Grass-green foliage in summer, the Taxodium distichum is one of the most effective trees for contrast in the landscape during autumn when clad in its warm, reddish-brown clothing; it perhaps shows off to the best advantage when associated with Conifers of sombre hues, or other dark-coloured evergreens. There are several varieties of this tree. I think, however, none of them is more beautiful than the common form. T. d. pendula is probably the most distinct variety, but this even is not superior to the type. There are two good specimens growing at Longleat; the oldest and largest tree is very ornamental and picturesque; its height is 63 ft., the girth of its butt is 9 ft. 4 in. at the smallest part; at 4 ft. up it divides into two main central limbs, girthing respectively 6 ft. 9 in. and 5 ft. 7 in.; the widest spread of branches is 35 ft. The other, and younger specimen, is about 40 ft. high, and girths 4 ft. 2 in. at 5 ft. up; it is well furnished with branches from near the base to the top, and is of a pyramidal habit of growth. This Cypress is deserving of more attention amongst planters where ornament and variety of foliage is the object desired. It has been but sparingly planted hitherto, and good specimens of it are by no means plentiful in this country. George Berry.

Taxodium distichum.

A NEW SHRUB (LIGUSTRINA AMURENSIS).

Of all the ornamental trees and shrubs which have been introduced within the last few years one of the handsomest and most valuable is the subject of these remarks, the Ligustrina amurensis, or Amour Lilac (figs 3 & 4). It is not only a handsome shrub, but it is very free blooming, and its numerous flowers grow in thick compact bunches (fig 3 & 4), giving the tree a peculiar appearance. Its characteristics are as follows:—A vigorous shrub branched from the base, the scales of the leaf buds of a brownish-red, those of the flower buds often speckled with greyish white. The leaves are very glabrous, pendent, petiolate and tough, polished on the upper surface, of a broad, oval shape, and pointed at the ends. Those of the young shoots are much longer, and more pointed, reminding one of the leaves of the Japanese Privet. Those of the flower stems are of broader and shorter oval, the leaf-stalks being longer. The inflorescence is much branched, and consists of very thick, compact panicles, often measuring as much as 6 in. in breadth, often larger, and forming thyrsoid bunches. Sometimes they are narrower, as shown in figs 3 & 4. The flowers are shortly tubulated, and measure from $\frac{1}{4}$ to $\frac{2}{3}$ in. in width. They have four and, very rarely, five divisions, of a rounded, oval form, of a beautifully pure white, with an odour reminding one of that of the Privet, but of a much more delicate character. The seed pods, which grow upright, are dehiscent (fig 2), and have two shells which open a very short time after the seed arrives at maturity. The seed (fig 2A), are

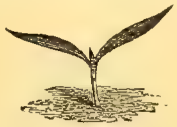


Fig. 1.—Ligustrina amurensis. A young seedling of the natural size.

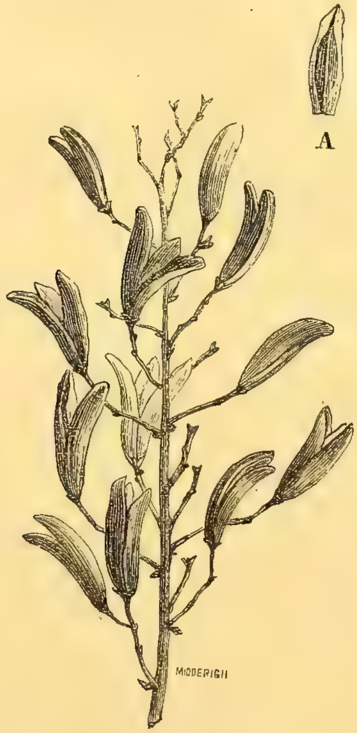
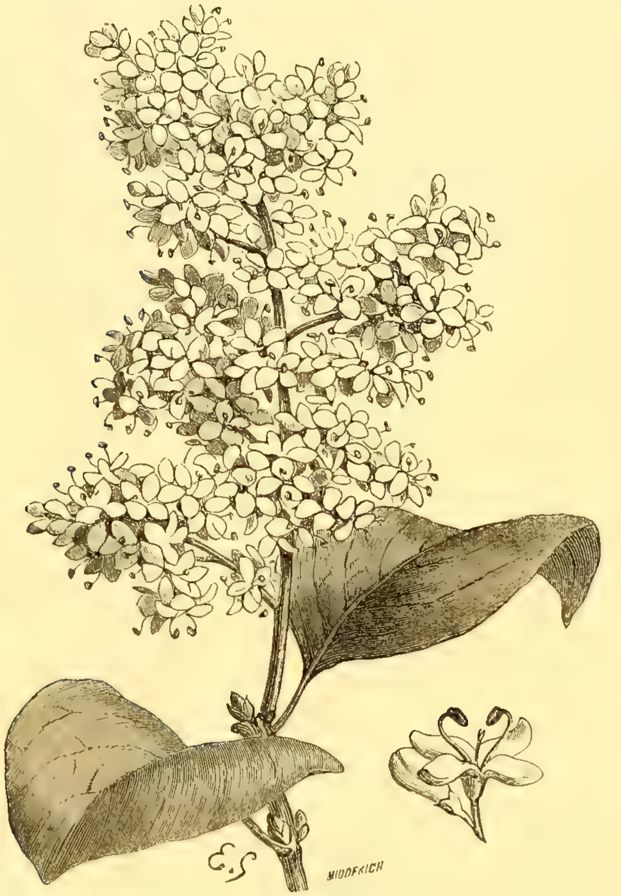


Fig. 2.—Pods and seed (A) of Ligustrina amurensis of the natural size.

of a long oval shape, entirely surrounded by a thin membrane, which forms a kind of wing. The first information which reached us respecting this shrub was published in the " Gartenflora," by M. Regel, Vol. XII, 1863, a translation of which we extract from the " Revue Horticole of 1863:—The Ligustrina amurensis is a shrub which is indigenous to the banks of the Amour and the north of China; it bears the flowers of a Ligustrina and the seed pods of a Syringa. There are two varieties of this species, one of which belongs to the banks of the Amour and the Ussuri and has oval-pointed leaves; while the other, which is a native of the neighbourhood of Pekin; is remarkable for having its leaves almost heart-shaped. This shrub grows to a height of from 10 ft. to 16 ft. It is to be recommended for the abundance of its foliage and beautiful masses of flowers. As it stands the winter in St. Petersburg, protected by a simple covering of dead leaves, it is more than probable that it will be perfectly hardy in the climate of France. The introduction of this charming plant is due to M. Maack, who sent home some seeds of it from the banks of the Amour and the Ussuri.



Fig, 3.—Flowering branch of Ligustrina amurensis (reduced) with a flower of the natural size.

It will be seen that the Ligustrina amurensis, Ruppr., is truly intermediate between the Lilacs and the Privets, as may be readily proved by a visit to the nurseries of M. Armand Gonthier, of Fontenay-aux-Roses, who has some fine specimens of this plant, from one of which figs. 3 and 4 have been taken. Having sown the seeds, we have been able to study their germination, as shown in fig. 1, which is a representation of the plant several days after making its appearance above ground. The young seedling is delicate, the stem being not more than $\frac{3}{4}$ in. long. The cotyledons are narrow and oval, and slightly pointed. Having sown the seeds of several different species of Lilacs and Privets at the same time, we can bear witness that none of the seedlings of these species are at all like those of the Ligustrina, which, in this respect, also seems to be intermediate between the two genera.

The Ligustrina amurensis, Ruppr. (Syringa ligustriflora), Hort.; Pseudo-Syringa amurensis, Carr. MS.) is one of the prettiest spring shrubs that it is possible to see; nevertheless, it has one grand defect, which renders its cultivation in the north of France, and even in many parts of the centre of France, a matter of some difficulty. It starts into growth extremely early, even bursting into leaf before the winter is over. On this point, M. Lemoine, horticulturist at Nancy, who was one of the first to introduce this plant into the market, and M. Oscar Thomas, who has grown it for several years in the nurseries of MM. Simon Louis Frères, at Plantières-les-Metz, have never seen it in flower. In a letter on this subject, addressed to us by M. Lemoine, he says:—"I have given up growing this plant, never having had the good fortune to see it in flower. In 1861 I received seeds of this species, and introduced them into the market in 1863 under the name of Syringa ligustriflora." This is doubtless a great defect, which, however, need not interfere with the cultivation of this plant in northern climates. It is quite worth while to grow it in pots or tubs, so that it may be taken into the Orangery or greenhouse in the winter. This shelter is indispensable wherever the flowering, which takes place about the end of March, would be interfered with by the cold. There is no question as to its general hardiness; the greatest cold has no effect upon it.

We have seen above that the Ligustrina grows in two forms —the one of which we are speaking of—which is indigenous to the banks of the Amour, the other, which is found about Pekin, is closely related to the first variety, from which it is only distinguished by its nearly cordiform leaves. Seeing, therefore, that according to geographers the Amour is in the Chinese Mandchou Empire, we can only suppose that the plant found in the neighbourhood of Pekin is a very slight variety of the species we have been speaking of. We are con-

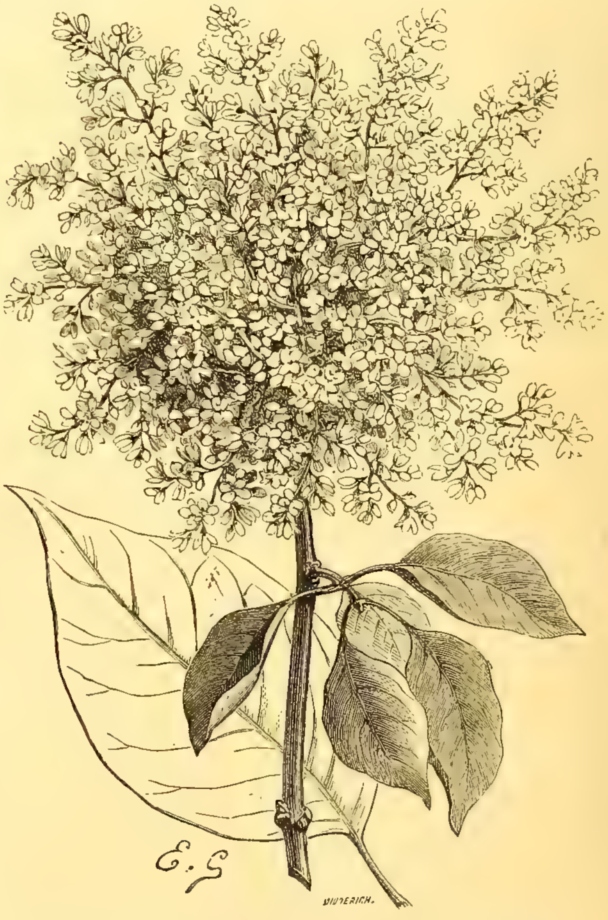


Fig. 4.—Inflorescence of Ligustrina amurensis (two-thirds natural size).

Ligustrum and Syringa, or else constitute it a new sub-genus, for instance, Pseudo-syringa, a name which we were the first to bestow on it. In fact, judging by its general appearance, and above all by the young plants, one is reminded at certain periods of their growth of the Japanese Privet (Ligustrum japonicum). Its inflorescence, its form, and above all the odour of its flowers, so closely resemble those of the Privet, that several botanists to whom we have shown the flowering branches of this plant have not hesitated to refer it to the last-mentioned genus, although the seed pods and seeds connect it with the Lilacs. As for the propagation of the Ligustrina amurensis, although it may be done by seed, cuttings, layers, or grafts, it nevertheless seems to us to present certain difficulties which very probably will disappear when we have found out the proper time for planting in the case of cuttings, or suitable stocks if we are grafting. Some herbaceous slips which had been grown in a hothouse which we planted under a bell glass struck easily. As for grafting, we have succeeded better when we have performed the operation under a bell glass during the course of the summer. The Ligustrina amurensis may be obtained from MM. Simon-Louis fréres, at Plantières-les-Metz; or from M. Gonthier, nurseryman at Fontenay-aux-roses, near Paris.—E. A. Carriere, in the "Revue Horticole."

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Tying Plants.—In plant training, amateur cultivators will do well to avoid the two extremes of tying their plants too formally, and the opposite of allowing them to hang about in a straggling, unsightly state. Every plant, so far as is consistent with the position it occupies, should be trained so as to exhibit as near as possible the form it would assume in a state of nature. No more supports should be used than will keep the plant collectively in shape, as anything beyond this is objectionable; the sticks in all cases should never be used stronger than necessary, and ought to be painted a shade of green the least conspicuous, always tying the branches, as far as possible, in such a manner that they will hide the sticks. In the case of the commonest plant, the least susceptible of injury to the roots, the sticks should never be inserted in the soil deeper than necessary to hold them with the branches attached in the position they are placed. With tender-rooted, hard-wooded subjects, it is still more requisite to be careful in this matter; quantities of trained plants in all stages, from a small state up to full-grown specimens, are annually killed by numbers of sticks being thrust unnecessarily deep in the soil, the effect of which, in mutilating all the fine roots they come in contact with, needs only a slight consideration to fully realize. Care should always be taken not to draw the tying material so tight as not to allow room for the branches thickening, more particularly in the case of such plants as go on from year to year without being headed back. This applies to Heaths, Azaleas, and all other plants of a similar hard-wooded character. In this annual training the largest portion of the stock should be first commenced with, as the old sticks from these, replaced by larger ones, will come in for others a size less, and so on until the smallest are completed.

Bulbs, &c.—More bulbs, such as Hyacinths, Narcissus, Tulips, and Crocuses, should be placed in warmth to bring them on into bloom; it is much better to regulate their introduction thus into heat, so that the supply of these flowers may be equal to, but not in excess of, the demand, which will be effected by placing some in warmth at intervals of three weeks or a month. A portion of hardy shrubs, where they are used for forcing, should also be placed in heat; but these, excepting Lilac, should not be subjected to too much warmth, especially so early as this, as they will not stand so high a temperature; nor as later on, when there is an increase of solar light, and nearer the time when growth would commence naturally. The lighter position all such things can occupy the less disposition there will be in the buds to refuse opening, or in the term that gardeners generally employ, to go blind.

Lily of the Valley is one of the most acceptable forced plants grown, and will bear strong heat, but care should always be taken where this plant is forced to use nothing but those crowns that have acquired sufficient strength to flower, as, if weak growths are employed, such as frequently used by the inexperienced, no possible treatment that they can be subjected to can induce them to bloom; hence the disappointment often resulting from the use of home-cultivated plants that have been grown near and under the shade of trees, the roots of which have monopolised most of the fertile elements in the soil, and through the growing season have absorbed the moisture so indispensable to the Lilies acquiring strength to flower freely. Where much of this desirable winter plant is required, it is better and cheaper in the end to use imported roots.

Potting Soil of all descriptions is much better kept in the open air than in sheds under cover, where it becomes dry and appears to lose a great deal of the properties essential to the support of vegetable life; but all that is required for use during the next two months should at once be got under cover if possible in an open shed, where it can be spread thinly upon the floor and occasionally turned over, allowing it to remain in a loose open state, so as to expose it so far as possible to the drying influence of the air, which, after so much wet, is more than usually requisite. Too much cannot be urged as to getting potting soils for even the commonest subject, into a suitable condition as to moisture before being used, as, if plants are put in it when too much moisture is present, it at once assumes the consistency of a hard baked mass, in every way unsuited to free root-development, without which no plant can make satisfactory progress. It is well to impress upon beginners that it is much better to err in having the soil a little too dry than in the opposite of being too wet, as in the former case the only evil that follows is the necessity for applying water to the plants at a shorter interval after the potting is completed than is advisable, an operation that should always be deferred as long as possible, except in the case of a comparatively few moisture-loving, vigorous-rooted subjects. This getting under cover applies to loam, peat, leaf-mould, rotten manure, and sand; so far as the latter is concerned, if at the time of being used the loam or peat is a little too moist, this to some extent can be corrected by first expelling all the moisture from the sand by placing it in close proximity to the hot-water pipes, or over a boiler-furnace at work; in such condition it will exert considerable drying influence upon the soil that it is mixed with, and as its agency in plant-culture is of a mechanical nature simply to keep the material in which the roots are placed open and porous, there is nothing essential to plant life in it. It is exhausted during the drying process, as would happen if loam or peat were subjected to similar treatment. Cucumber and Melon soil should also be placed where it will get sufficiently dry for use; if shed-room is not available, wooden, or felt-covered shutters put over it will answer a similar purpose, but not act so quickly as if the material was placed on a dry floor. All empty pots should be well washed alike inside and out, crocks broken in different sizes, and also washed clean, ready for use, wooden labels made, and everything prepared so that when the potting season, which with many things, will commence early in the new year, begins, it can be carried through much more expeditiously than when each thing has to be got ready as the whole proceeds; and all plants of a permanent character, both grown under glass, as well as fruit trees in the open air, should have their labels yearly examined; and such as have got rotten, and the writing become indelible, replaced with new; herbaceous plants also, and any shrubs or trees other than such of the commonest kinds, as nothing tends more to the pleasure of a garden than everything being found correctly named, so that any one not conversant with the things grown can easily make out what they are.

Hedges.—Deciduous hedges may at once be cut, acting in the matter with judgment, always keeping them, from their first stages, proportionately wide at the bottom, and narrow at the top; and, with such as have only partially attained the size they are ultimately to be, do not be in too great a hurry to get them up to the full size. This applies [to whatever kinds of plants may be used, Beech, Hornbeam, or Quickthorn, but to the latter especially; if ever let go too far, by allowing too great a length of growth to remain from where cut back to last year, the ill-effects will for ever after be observable; and this can only be rectified by half or wholly cutting down the hedge. Any work in deciduous hedge-planting yet remaining to be done should be forthwith completed, particularly where Quicks are employed, as the Thorn, being one of the earliest leafing plants we have, has the ensuing summer's growth very much interfered with, if not planted until near the time the buds begin to swell.

Frames.—Lettuce and Cauliflower plants in frames for planting out in spring, and also those under cloches or ordinary hand-lights, have, consequent upon the continued open weather, been kept in a more than usual growing condition. Use every means to keep the surface-soil in as dry a state as circumstances will permit of, by which they will be better able to withstand the effects of severe frosts; 1 in. or 2 in. of dry coal ashes in the case of the Cauliflower, and proportionately less to the Lettuce, will be an additional protection to the stems. Give abundance of air by full exposure in dry weather, with the lights tilted back and front, so as to admit of a current when it is wet. In this matter, treat similarly Lettuce and Endive for present use, as also such as required during the winter.

Continue to tie up, cover with boards or inverted flower-pots, Endive for a regular supply; this, the most essential plant for winter salads, needs a little more care to effect the blanching process when in frames, so as to exclude frost. Yet, despite all that is said about the convenience of blanching it in Mushroom houses, or any structure wherein there is a little fermenting stable manure, the frames are greatly preferable, as I have frequently seen Endive, as also Rhubarb and Seakale, grown under the influence of the ammonia-charged atmosphere become so affected by it as to have the most disagreeable flavour.

Kitchen Garden.—Any vacant ground yet remaining undug or trenched, should have these operations carried out, and where manure has to be got on this should be done when the surface is frozen. Parsnips in most places are generally found the best when allowed to remain in the ground until just before being used; but, where this course is followed with them at this season of the year, when possibly a protracted frost might set in at any time, a sufficient supply should always be kept under cover; also Horseradish for use, as well as Rhubarb and Seakale roots for forcing. Some of the latter should be put in warmth, where they will make growth from time to time, to keep up the succession. If more Rhubarb is placed under similar conditions, and also a portion of roots put in any building where frost can be kept out and the light excluded, it will come on without artificial warmth. In localities where the ground is moderately dry, and not naturally late, some Early Peas and Broad Beans should be sown, selecting the warmest and most sunny position. Sow only slightly below the surface, drawing soil to cover them in the form of a slight ridge, with an inch of coal ashes on the top; for this sowing also put in a third more seed than would be required later on.

GARDEN WORK FOR EVERY DAY.

EXTRACTS FROM MY DIARY.

By W. G. PRAGNELL.

December 31.—Covering up Vine borders with long litter, just sufficient to keep frost out. Planting border with Early Mazagan Beans. Pruning Mrs. Pince Vines. Turning over leaves and long manure for making hotbeds. Cutting all the Lady Downes Grapes with about 6 in. or 8 in. of wood attached to the bunch, and putting them in bottles in Grape room.

January 1.—Sowing four rows of Sutton's Ringleader, four rows of William the First, one row of Dr. Hogg, and one row of Unique Peas. Preparing pit for Ash-leaved Kidney Potatoes, and turning out a crop that had been brought forward in pots. Washing the paint in Mrs. Pince Vinery with soft soap and hot water. Glou Marceau, Ne Plus Meuris, and Easter Beurré Pears now plentiful and good.

Jan. 2.—Potting off Tomato cuttings. Getting Strawberries plunged in leaves to start them. Tying pot Vines, which have broken satisfactorily, up to the wires. Spawning a new Mushroom bed and moulding it over 2 in. thick. Getting on with digging and trenching as fast as the weather will permit. Turning over a large heap of manure to rot, adding 20 lb. of salt and 1 bushel of soot to the load.

Jan. 3.—Sowing Cucumber and Melon seeds. Painting over the Vines in Mrs. Pince house with composition, and tying up the Vines, afterwards forking over the surface of the border lightly, and giving it a little top-dressing. Looking over the Grapes in bottles, removing any bad berries, and filling up the bottles where required with water.

Jan. 4.—Getting 100 pots of French Beans in, and earthing up a more forward lot; also a few pots of Potatoes. Covering up Endive and Lettuce to blanch. Getting manure on to the land whenever the weather is dry. Filling another four-light pit with leaves in which to plunge Strawberries.

Jan. 5.—Putting in cuttings of Chrysanthemums. Getting on with the pruning and nailing of Pears and Plums on walls. Manuring and forking the ground amongst Gooseberries and Currants. Emptying a four-light pit, and refilling it with leaves and manure for Early Melons. Examining fruit-room, and removing any fruits that are beginnng to rot. Cleaning kitchen garden walks. Fruit in use for dessert:—Pines, Grapes, Pears, Apples, and Nuts.

Holly Sports.—We have here a very remarkable sport, from a small leaved Holly. It appeared near the top of this tree, and is now a branch about 1 ft. or so long. The variety has usually a dual character, being frequently composed of about equal parts of the small leaved type, and of an intermediate kind. The most singular part of the matter is that this kind but rarely produces berries, and in this case only the larged leaved sport upon this one plant hss any, and they are much more elongated than those produced by the typical form.—F. Smith, *Newry.*

HARDY FINE-LEAVED PLANTS.

Sub-tropical plants have been written upon, and recommended long and enthusiastically, but they have received a cautious and retrogade experience, simply because the majority of them pushed forward are not suited to our climate generally. But there are some plants of graceful or noble form which should not be lost sight of, though many are found wanting, because those some are so sufficiently hardy that they may be very generally planted as permanent specimens without much fear of their ending in disappointment. Now this quality of hardiness is the spice with which we wish to season the following recommendations; and, in doing so, we acknowledge that we only reiterate what has often been presented to our readers before. But we are so satisfied with the beautiful effects of groups, or single specimens of them, interspersed on lawns, among flower beds and shrubs, that we ask no apology for again calling attention to their several merits. The past season of excessive rains seems to have been much in favour of their healthy development, and consequently bringing them out in full beauty. Foremost among the very hardy and bold tropical-looking plants, is certainly the

New Zealand Flax (Phormium tenax).—In the latitude of Dublin it seems perfectly hardy, and grows into large, strong tussocks, of several feet diameter at the base. In Hampshire, as might be expected, it succeeds perfectly; and we have seen large plants of the yellow-striped variety in the open-air shrubbery in that county. It seems to thrive equally well with its roots submerged in water, or on the top of a dry rockery—the latter position, and in a well-sheltered situation, is to be recommended as the north is approached. The plant does not seem at all particular as to soil; indeed, it seems to prefer a strong and retentive to a light and hungry soil. In the gardens of the Viceregal Lodge, Dublin, may be seen a number of grand old specimens, which have been planted out many years—being in height and circumference with Pampas Grass and Arundo conspicua.

Aralia Sieboldii is another equally hardy plant, which grows into a strong, dense bush, by throwing up numerous strong suckers from the root like a Hazel—the leading branches, however, becoming as strong as a brush handle. Its large, shining green, Palmate leaves, like a spread-out fan, have an exceedingly tropical appearance. Shelter from draughts and eddies, and strong winds, is all the management it seems to require. With a good-holding, nutritious soil, a large stool of this plant will supply numerous offsets with roots, by which means it is easily propagated. The leaves of this plant ought to be invaluable for table decoration, for getting up bold dishes of flowers for rooms, and for furnishing grates in summer, besides its evident merits as a lawn-plant.

Dracæna australis.—It is curious that this is not more generally planted. At Knockmaroon Lodge, near Dublin, is a plant some 16 ft. high, many years planted, with a stem some 6 in. in diameter, which flowers and bears abundance of seeds annually, from which Mr. Pressly, the gardener, raises seedlings thick as Onions in a cold frame. Groups of this plant have a most striking effect in a pleasure-ground—Palm-like and unusual. In the Scilly Islands the plant becomes a great tree, luxuriating in the mildness and moisture from the Gulf Stream; but the fact that it annually flowers on young plants in the climate of Dublin, and ripens its seeds, is sufficient proof of its hardiness, and that it will succeed much farther north on the English coast. As we have indicated, it is readily increased from seed, from pieces of the stem, and offsets. If a plant is cut over close to the ground, a number of young shoots soon spring up, which can be taken off as cuttings, and which strike with freedom. We have cut over an old plant with a stem as thick as one's arm, and set it firmly in the ground, and before many weeks it has struck root and become a plant: all the attention was an occasional syringing of the leaves and old stem.

Acanthus lusitanicus, when well and strongly grown, is a striking plant as a single specimen on a lawn, or as a marginal line round a bed of Bamboos or the last-named Dracæna australis. The shining-green, deeply-cut leaves have a luxuriant, sub-tropical effect; and the bold spikes of strikingly peculiar flowers enhance its value for the later summer months. This is an old-fashioned, hardy herbaceous plant deserving of more attention.

Funkia Sieboldiana, when well grown, is also a bold, striking plant: its large, cordate, glaucous leaves contrast well with darker-green plants, and with Grass. It delights in partial shade; should be dry at the root in winter, but liberally supplied with nourishment and water in summer; and if raised on a mound or large hollow block, it has a fine effect: it may also be used as a bold margin to beds of taller plants, as recommended for the Acanthus. Care must be taken of this plant in spring, as slugs are fond of the young foliage, which they soon destroy, or eat holes into. This is another of the old-fashioned, hardy-herbaceous plants which will come to the front

Arundinaria falcata has proved itself almost perfectly hardy, certainly so in the south of England. Last year it seeded freely, and seedlings have come up under the old plants in the open air. We succeeded in raising some young plants last autumn from seed ripened in the open air in August. The fact proves it to be sufficiently hardy for a considerably more northern climate. In the neighbourhood of Dublin it is 12 feet high; and no plant can be more graceful and desirable for beds on the lawn than this elegant Bamboo. Bambusa metake, if not quite so graceful as the last, is equally desirable. It is stronger in habit, stiffer in growth, with much larger leaves, likes a deep moist soil and shelter, though perfectly hardy; it soon grows into a rather straggy, dense bush.

Bambusa Fortunei variegata is a very hardy, free-growing plant in shelter, and attains a height of 3 ft. in a favourable situation, and as a handsome margin plant for a clump of Bamboos of the larger size, or to Aralia Sieboldii.

Arundo donax and A. donax variegata are plants of the same general aspect of the Bamboos, perhaps not so graceful. The green Arundo grows freely enough, and is quite hardy; soon makes a large bush in a favourable situation; loses its leaves, however, in winter. The varigated variety is a really beautiful plant, but not so hardy as the green. It has a handsome effect on a rockwork hanging over water.

Aralia spinosa, Rhus elegans, R. laciniata, Dimorphantus mandshuricus, are shrubby plants of a peculiarly tropical habit, especially the first and last. They deserve to be planted about pleasure-grounds as single specimens. The Dimorphanthus, an Arali-looking plant of free, soft growth, with leaves of large size, deeply pinnated like Aralia spinosa without the spines; young plants look well in the centre of flower-beds.

Yucca recurva is so well known, that the name only requires to be mentioned; it is perfectly hardy and graceful. As a Dracæna, it is a plant which will fit in anywhere—in the centre of beds, on the lawn as single specimens, or in groups.

Gunnera scabra is an interesting and curious plant, with its bold foliage like Rhubarb, and its curious fructification—a stiff, rigid, columnar spike, covered ovr at present with bright-red berries or seeds: it suits well as a group on the lawn.

Bocconia cordata deserves a bed to itself. It has a peculiar, glaucous, sub-tropical aspect, with long spikes of small white flowers in autumn. It is quite hardy, spreads rapidly under ground, and attains a height of 6 feet.—"The Gardener."

Destructive fire at Messrs. Weeks'.—Our readers will regret to hear that the extensive premises belonging to Messrs. Weeks and Co., horticultural builders and hot-water apparatus manufacturers, King's-road, Chelsea, have been destroyed by fire, which broke out on Sunday morning last, and in spite of all exertions, the whole of the premises were soon alight, and in about an hour after the outbreak the roof fell in with a loud crash on to the valuable machinery underneath. For more than three hours the firemen continued their exertions. The amount of damage occasioned by the calamity—the cause of which is unknown—is serious, and will fall on the Liverpool, Imperial, and Globe Insurance offices. The proposition made by the Metropolitan Board of Works as to the establishment of a system of fire hydrants throughout the metropolis, as a means of extinguishing fires in lieu of engines, an official intimation to make the first practical test was received after the fire had been subdued. Around the property destroyed eight stand pipes were arranged, and the experiment was in every respect satisfactory. A stack of chimneys over the boiler-house remained standing, above 50 ft. in height, and the water from the eight jets supplied by the Chelsea Waterworks went considerably over them. The inconvenience that must inevitably result from the destruction of Messrs. Weeks' workshops is great. But this being only one out of four of their business premises, by converting portions of the foundry, boiler works, and stores into temporary workshops, the general conduct of the business will suffer no interruption. Several hothouses belonging to Mr. Bull, which adjoined Messss. Weeks' premises, suffered severely through the intense heat caused by the great body of flame; and some of their contents, chiefly new plants, were destroyed. The resources of this Nursery are, however, such that little inconvenience will be the result.

Seedling Briers.—A point on which I should especially like to know something of the practice of others is the seedling Brier—not the "working" of it, but the growth and treatment in its various stages from the seed. Is anything published bearing on this subject? Neither Paul nor Rivers in their Rose books mention it.—E. C.

THE KITCHEN GARDEN.

KITCHEN GARDENING MADE EASY.

Let me now take mid-season Peas, a crop which requires the best and richest ground in order to grow them well. In fact, if Peas be grown in fat land, the produce is fat, and many mid-season Peas get disregarded just because the land is poor; and so, in consequence, are the Peas. My selection of four mid-season Peas is as follows:—First, Laxton's Marvel (not out), a kind which grows from 4 ft. to 4½ ft. high, and which has pods slightly sickle-shaped, containing from eight to ten Peas in each, the flavour of which is excellent; second, Dr. M'Lean, which is well known to be a good variety; third, Laxton's Standard, also a Pea of great excellence; and, fourth, G. F. Wilson, likewise a good and useful variety. These four varieties grow about the same height. When staked, I mulch between the rows with long manure, to keep down weeds and to keep the soil moist. When the Peas are cleared off, which is in August, I cultivate the ground on which they grew, treating it with a pinch of guano, and sow Tripoli Onions. I always find that the best Onions grow on the seed-bed, if properly thinned and the ground well worked. If for exhibition purposes, a good watering with liquid manure greatly increases the size of the bulbs. This crop comes off in July, if pulled green (and I am no advocate for keeping Tripoli Onions long on hand). The land is then in the best trim possible for either Winter Spinach, Coleworts, Turnips, or any green crop which is thought desirable, thus having Peas, Onions, and a green crop with one digging only.

R. Gilbert.

Burghley.

FORCING RHUBARB.

The handiest-sized roots for forcing are those about three years or four years old; they can easily be taken up and moved anywhere, where a little artificial heat can be secured. Large old roots cannot be moved without a good deal of mutilation, which weakens the produce. Apples are generally so scarce this year that there is sure to be an early and a large demand for forced Rhubarb. With a temperature any where between 45° and 60° success will be certain; of course the temperature should be regular and steady; the plants should not be over heated one day, and starved the next. I know a baker who always grows beautiful early Rhubarb in a shed adjoining his bakehouse; the wall of the oven abuts against the shed, and keeps up a steady heat. Strong roots may be taken up and packed in old deep boxes, baskets, or cement casks; these could be moved anywhere where warmth can be had. I always think early Rhubarb that has been grown in twilight or partial darkness is better in colour, and more delicate in flavour, than where fully exposed to light. When grown in an atmosphere charged with ammonia from rank manure the flavour is generally unpleasant. This, however, can always be obviated by throwing the manure into a heap, and when it heats well, turning it over, shaking and mixing it well together. This should be repeated if the manure be fresh from the stable in about a week or ten days. In most places leaves can be obtained, and these should always be raked up in autumn, and placed in a stack for hotbed making, covering them with straw or litter, to keep the wind from blowing them about. With a supply of leaves and a little manure, to hold them together, a station for forcing Rhubarb may be made in any out-of-the-way corner. It may be either oval or round, but it should at least have a regular outline. Having decided upon the position and its size, drive in a few stout, rough stakes, 18 in. apart, leaving them, when driven in securely, about 3 ft. 6 in. to 4 ft. out of the ground. Fagg-wood or rough branches of any kind may be entwined between the stakes, so as to form a substantial wattled fence round the station; and outside, against this, the fermenting materials (leaves and manure in about equal portions in the shape of good substantial linings) should be placed. The roots of the Rhubarb or Seakale should be packed nearly close together inside, and should have all the interstices filled up with fine soil. They should have a good watering with tepid water, to settle them, and the top should be covered with hurdles, deeply thatched with straw, leaving a clear space of 18 in. or so between the roots and the roof. I have forced good-flavoured Rhubarb and Seakale in this way without much trouble or expense. When a good supply of roots is provided, a very small amount of ingenuity will contrive some mode of forcing them. Roots that have been forced, if not gathered from too severely, if sheltered somewhere till spring, will divide into a number of eyes; and, if planted out on good land, 2 ft. apart, will make excellent plants again in two or three years. E. Hobday.

The Plumed Hydrangea in Masses.—We have to thank Mr. W. C. Barry, of the Mount Hope Nurseries, Rochester, for a photograph showing a mass of this fine hardy shrub in full bloom. Mr. Barry says:—"The bed attracted great attention during the past summer. On my return from Europe, the plants were in full flower, and, notwithstanding the many remarkable and effective beds of flowering and fine foliaged plants which I had seen abroad, I thought nothing equalled this. The mass consists of thirty-five plants, with a broad edging of Coleus, the Shah, around it. The contrast between the green grass, the crimson and yellow foliage of the Coleus, and the immense white and pink panicles of the Hydrangea was novel and beautiful. I have often seen and admired large single specimens of this Hydrangea, but masses like this are uncommon, and I call attention to the manner of planting, as it tends greatly to heighten the effect and increase the attractiveness of this noble shrub. No hardy flowering shrub which we cultivate seems to possess so many good qualities. It may be safely predicted, that when it becomes more generally known, none will rank higher in popular estimation."

Conservatory Staging.—I am glad that "A. J." (see p 603) has paused before accepting the bad advice of his friends, who urge him to put two stands down the middle of his conservatory. Such staging, with staging round the sides, will cost him a good deal of money, and will spoil his house. In a conservatory where plants are not grown, and need not be near the glass, there should be no staging, or but little. If "A. J." wishes to grow herbaceous plants in his conservatory he must have staging near the glass, and he must make the show of his plants of secondary importance. But if he uses the word conservatory in the common sense of a show-house for his plants, let him arrange it thus:—Supposing the sitting-room to open in the middle of one side of the house, let him draw on the floor a square, equal, say, to one-fourth of the area of the house, in such a position that one of its angles be opposite to the sitting-room door, and its remaining three angles pointing to the middle point of each of the other sides of the conservatory. In the centre of this square let a block be placed, or a very large pot inverted, according to the height required. Upon this must be placed a large plant. For summer, the shade of a Tree Fern, such as a Dicksonia, would be desirable—and this may be replaced in winter and spring by a Palm, a large Camellia, or a large Acacia. Around and under this central tree, upon blocks, or inverted pots, flowering plants must be grouped according to the season, and the whole may be edged by small pots or long troughs of Lycopodium and Isolepis, or by sowings of Lobelia, Myosotis, and the like. Boxes of Christmas Roses should be prepared for the winter season, and bulbs to succeed these. Later again come Cinerarias, pot Roses, and so forth. In each corner of the house a large box, or, still better, a square brick bed should be placed wherein four such plants as Roses, Lapagerias, Tacsonias, or Heliothrope should be grown, and run upon the roof. Clematises and Fuchsias are better in pots, which can be removed in winter. The boxes or brickwork should be thoroughly drained and their sides covered with virgin cork, to receive small Ferns, and similar greenery. Along the sides of the house a long trellis-table may be placed from box to box to receive Lilies, Pelargoniums, and other decorative plants, but even these are better placed bankwise around the house, the back rows being set up upon inverted pots. If some of the money saved from the staging be spent upon a red-tiled floor, the house will look all the brighter.—T. C. A.

—— I would strongly recommend "A. J." (see p. 603), to keep the centre of his greenhouse open—put shelves all round the apartment say about 4 ft. wide, this will give 16 ft. square in the centre. In this way a much smaller number of plants gives a greater effect, as all may be under the eye at once. The centre will make a pleasant lounge or promenade, and may contain some seats and ornamental flower vases, such as the Leicester vases, or others more ornamental. On the floor may also be placed large flower pots, with large plants, such as Acacias and Rhododendrons or Tree Ferns. I can speak with experience in this matter, as in addition to the shelves all round my house I put a centre shelf also which I afterwards removed with great advantage.

Future of the Royal Horticultural Society.—Next year, during March, April and May, the fortnightly Exhibitions will be held in the Conservatory. In June, a four days' Show, which the Council hope will at least equal any ever seen in London, will be held in the gardens. In July, a four days' Provincial Show on a large scale will be held, under the patronage of the Society, at Preston; the funds for this purpose being raised by guarantee. Any surplus from this show will be vested in trustees, for the promotion of similar shows, which experience has shown powerfully stimulate practical horticulture. The Council hope to resume the publication of the Journal of the Society on a suitable footing, and to make satisfactory arrangements with correspondents in foreign countries for the collection and transmission to England of rare seeds and plants. The council desire to render the South Kensington Gardens attractive to London Fellows and members, and with this object will provide a band and give promenades every Saturday, while the attendance justifies the outlay. These promenades will commence on Saturday, January 19th, will, during the winter, last from 3 to 5 p.m., and be held in the Conservatory, which will be warmed, and when necessary lighted at dusk; fellows' tickets and small book orders will admit to them; and, to render them select, the minimum charge to the public will be half-a-crown. Although the position of the Society has improved to an extent that could scarcely have been anticipated at the beginning of this year, the Council must remind fellows and members, especially those resident in London, that the aggregate amount of their annual subscriptions is still far short of the £10,000 which must be raised from that source during the next twelve months, to prevent the forfeiture of the South Kensington Gardens. The money must come from the subscriptions of Fellows and other annual subscribers; if not so raised the gardens will be forfeited and perhaps built over; if so raised, they will be secured to the Society for 15 years. The Council believe that if fellows and members exert themselves individually to induce their friends to join the Society, the amount required, which exceeds the average income from subscriptions in the years 1871 to 1874 inclusive, by less than £2,000, can easily be obtained. If the gardens are to be preserved this effort must be made at once. 179 debenture holders have accepted fellows' privileges, (except that of voting) in lieu of interest on their debentures, and the council believe it will be possible to make a similar arrangement on a more extended scale for 1878. All the expenses of the Society for the year have been paid up to date and out of revenue.

Hardy Plants.—What is the name of the enclosed Chrysanthemum? We find it very useful at this late season of the year. I also send a hybrid Myosotis, which seems to be a perpetual bloomer. It is a strong grower, and has been in bloom since last May. This Forget-me-not cannot be too largely grown, as with very slight protection it may be had in flower during the whole winter. The enclosed small variety of Sedum acre is a charming little plant for rockwork or carpet bedding. I found it a summer or two ago on Mickleham Downs, Surrey, along with the true Sedum acre aureum, which keeps its golden tint throughout the summer.—W. E., *Stapleford Hall, Notts.* [The Chrysanthemum, judging from the flowers alone, resembles the one that used to be grown occasionally in London collections of herbaceous plants as C. lacustre.]

Cocos Weddelliana.—Will some reader of The Garden inform me whether or not this is quite a cool greenhouse Palm?—C. B.

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